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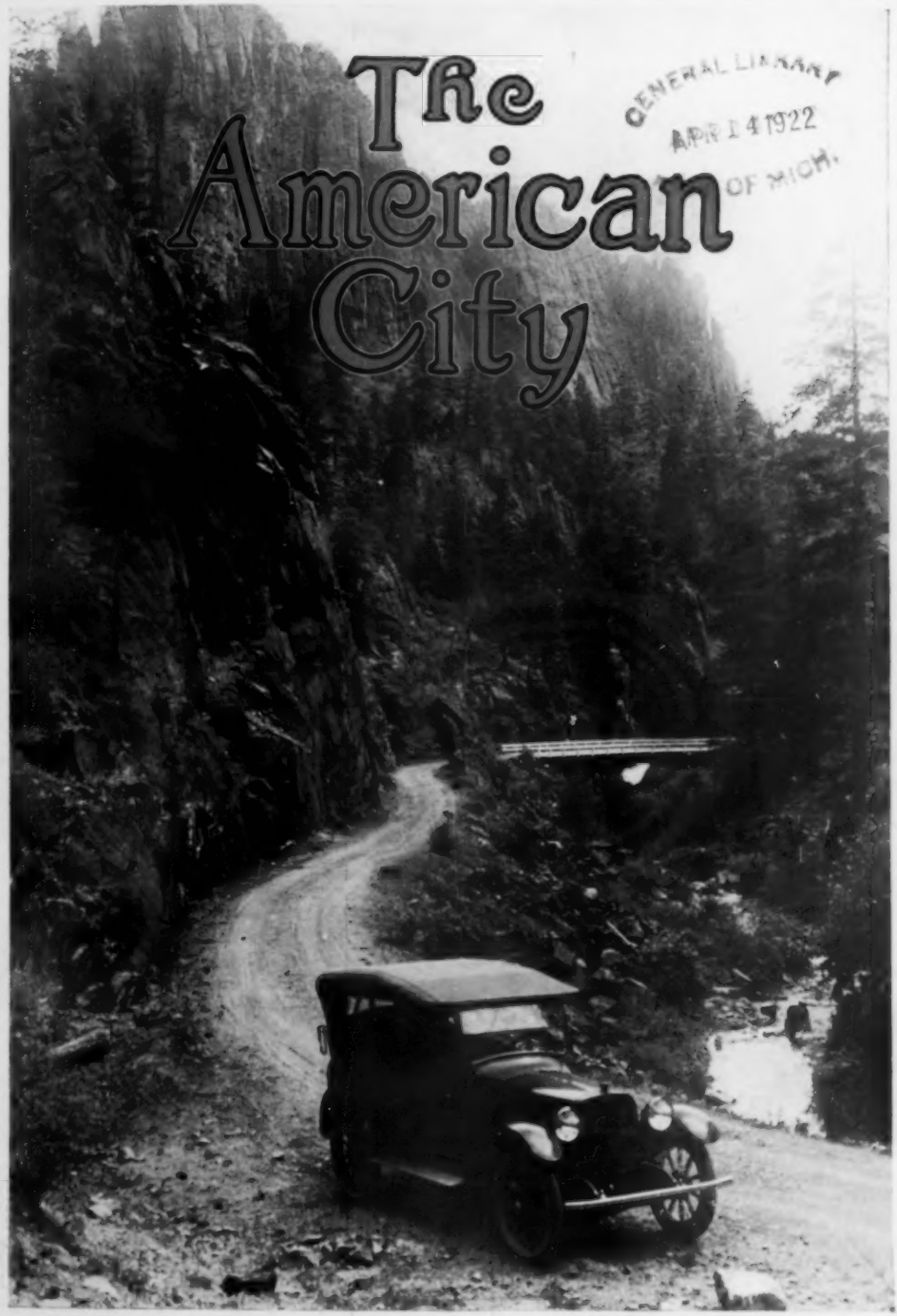
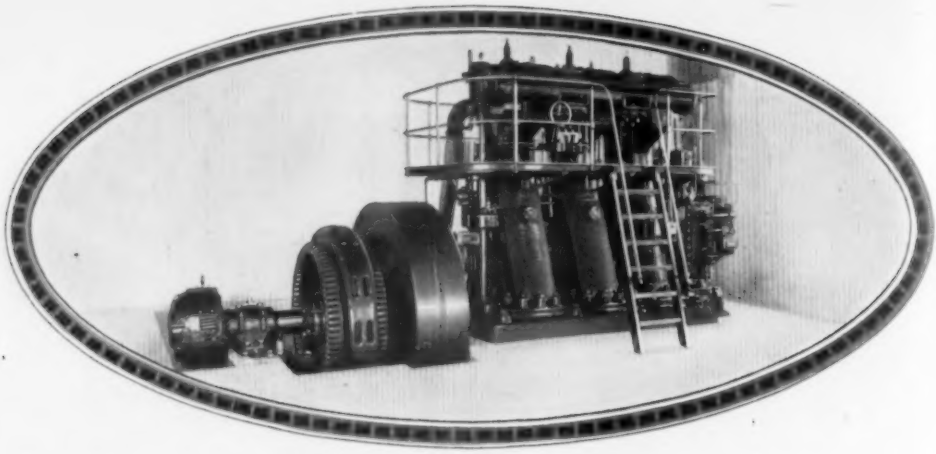


The Phantom Canon Highway near Canon City, Colorado, Rebuilt by Volunteer Labor from Florence, Canon City, Victor, Cripple Creek and Penrose, with the Cooperation of the Canon City Chamber of Commerce



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FULTON DIESEL ENGINES

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The American City Magazine

New York April 1922

What Are Your Municipal Problems?

A Series of Questions Relating to Activities Now Receiving the Attention of American Cities

FOR the purpose of assisting mayors and other city officials, especially those newly elected, in preparing their municipal programs, THE AMERICAN CITY presents a list of important activities and problems that concern progressive cities. In view of varying conditions and circumstances in different cities, the adoption of all these suggestions by any one city is not urged, but municipal officials may gain valuable ideas from a study of these questions.

Administration

Does your charter need revising in whole or in part? Many cities have been able to more economically administer their corporate business by judicious changes in their charters, enabling them to adopt commission government or the city manager plan.

Are your local ordinances in need of revision and codification? Several cities have revised and codified their ordinances in the last year or two for the clarification of municipal business and administration.

Is the election machinery in your city effective and operated at a minimum cost? This problem is receiving special study, and where election machinery is controlled by the state, action is being taken to reduce the cost of elections within cities without impairing the efficiency of the election machinery. The adoption of voting machines in many places has been one great step in this direction.

Is the organization of your city departments effective, and are the blank forms used by them satisfactory? Many cities are still using obsolete and unnecessarily intricate forms in their health, fire, police, building, inspection, tax, purchasing, street cleaning and other departments and bureaus. The use of carefully designed forms and of machine addressing frequently makes big savings in departmental budgets.

Taxes and Assessments

Does your board, bureau or department of assessment and taxation need to be reorganized? In some states a city is permitted by ordinance to abolish its elective assessors and to establish a department of assessment and taxation with a single head appointed by the mayor and a board of review.

Does your method of assessing real and personal property need to be revised? A large number of cities within the last two years have reorganized their methods of assessment and are now operating on a much more efficient basis. A number of large cities have also increased their assessed valuation, so that real property is now assessed at or near 100 per cent of its true value.

Does your method of levying special assessments for local improvements need to be changed? This is a matter which has been brought up for serious consideration in nearly 200 American cities within the last few years.

Do you need to improve your method of collecting delinquent taxes? Tax collection is usually a knotty problem with city officials, and a careful study of it may mean immediate and larger returns to the city and a lessening of tax sales.

Finance

Has your city adopted a uniform accounting and budget system? Many cities have made notable progress in this work within the last two years, reducing the labor of accounting systems through loose-leaf ledgers and other devices and effecting greater economies through proper budgeting.

Has your city adopted central purchasing for the various department bureaus and officials? A large number of Mid-Western and Western cities have adopted central purchasing and effected great economies in the buying of office supplies, machinery, etc., for municipal work.

Is your city receiving a fair rate of interest on its daily bank balances and time deposits? This is a great source of trouble in some municipalities and results in the loss of hundreds of thousands of dollars each year if daily bank balances and the interest thereon are not checked up.

Is your city adequately regulating and licensing businesses and private activities? Several cities within the last year have revised their license ordinances so to provide more effective regulation and more adequately reimburse the city for the cost of the licensing. This is one satisfactory and proper method for increasing municipal revenue.

Salaries and Pensions

Are you paying your city officials and employees too little, or too much? THE AMERICAN CITY has given much time and space to the investigation of this subject and has published extensive tables giving the salaries paid to municipal officials in various offices throughout the country.

Are your municipal pension systems and funds for policemen, firemen and other employees effective and in satisfactory condition? In many states the employers' liability laws apply to cities as well as to private employers. Proper care should be taken to finance pensions and compensation funds either through a reliable company or through municipal insurance.

Has your city adopted the most economical methods of insuring municipal employees? There are several methods in use to-day which can be studied to advantage by municipal officials.

School Finance

Are your relations with the school authorities as to management and financial control satisfactory? Inasmuch as education is usually the leading item in a municipal budget, great care must be exercised in the expenditure and the methods of control and management of school funds, and systems should be studied with a view to making more effective use of the money and to increasing the value of the educational system of the community.

Health

Does your city health work need to be reorganized? In some states, laws have been passed permitting the abolition of the bureau or board of health and the creating and maintaining of a department of health with a single head appointed by the mayor. Inasmuch as the health department is one of the most important to the welfare of the city, a full-time health officer with adequate appropriations should be maintained.

Is it the practice in your city to destroy school books and supplies furnished at public expense and used by pupils with contagious disease? If after investigation, it is found that your city is doing so, the matter should be taken up at once with your board of health to determine whether it is possible to eliminate this item of expense through disinfection.

Is your city effectively regulating soft-drink places? Model ordinances on this subject have been prepared and careful studies of the subject made by cities, with regard both to health and to finance.

Street Paving, Lighting and Cleaning

Are your streets properly paved to handle the type and volume of traffic they are called upon to carry? A careful study must be made of the volume of traffic in each part of the community, to decide whether dirt roads, water-bound macadam, bituminous types, Portland cement concrete, brick or other type block roads are necessary to carry local or through traffic as the case may be.

Are your business streets and residential

districts adequately lighted? In order to protect your city from crime and accident, ample street lighting is necessary. The higher-value business districts are made even more valuable through ornamental lighting, which lengthens the business day and brings added prosperity to the community.

Is your method of street cleaning effective and economical? Many cities in the United States are revising the organization of their street cleaning departments and methods of street cleaning through the adoption of more modern apparatus.

Fire Department

Is your fire department efficient and operating at a minimum cost? One of the problems now receiving the consideration of officials interested in fire fighting is the motorization of fire apparatus, the establishing of the two-platoon system and the extension of fire prevention work.

Is your city effectively regulating the installation of gasoline curb pumps and gasoline tanks? As installations of this type in automobile service stations may be a great source of danger to life and property, adequate attention and proper regulation are vital.

Police

Is your police department efficient and operating at a minimum cost? Crime prevention is an important problem now being studied by many American cities. The use of motor vehicles by criminals is forcing many cities to revolutionize their methods of patrolling streets and highways. Traffic regulation and parking of vehicles are also problems that have increased in importance in the last year or two.

Is your city effectively regulating pool and billiard rooms? A careful regulation is necessary in places of this type to prevent their becoming gambling establishments or gathering-places for criminals.

Traffic Control and Accidents

Do you have any difficulty in handling traffic at congested points? From the smallest village to the largest city, the problem of traffic regulation is assuming added importance. Suitable silent policemen or different types of traffic signals should be studied carefully, as they do much to prevent accident and expedite the movement of traffic.

Are there any grade crossings in your city where accidents may occur? The elimination of grade crossings is one of the vital problems in many American cities to-day. With the increasing number of motor cars carrying more people out on the highways, grade crossings are a constant source of danger and should be eliminated by judicious handling of the question of ways and means with the railroad.

Water

Have you taken cognizance of the fact that adequate filtration and sterilization of your water-supply is necessary to protect public health? A study of municipal water-supplies shows that there are practically none which can do without either filtration or sterilization as a protection against water-borne disease.

Is your municipal watershed completely reforested? The reforestation of municipal watersheds is not expensive, and with proper care the revenue which can be derived therefrom increases as time goes on.

Zoning and Building

Is your city zoned? Proper and judicious restrictions placed on various districts as to the types of structure and business which may be conducted in those zones go far to stabilize real estate value.

Are the plumbing, building and sanitary codes of your city effective and up-to-date? A study of the codes of other cities may be of great assistance in producing a more effective code for your city. It may mean more economical construction, which will have a direct bearing on the solution of the housing problem.

Parks and Playgrounds

Is your park area sufficient to provide a breathing space for all living in the congested portions of your city? Adequate breathing spaces in the form of parks, both large and small, need to be provided in every city for the well-to-do as well as the poor. Such spaces increase the healthfulness of the community and add to its material happiness.

Have you well-equipped playgrounds for children? One of the best ways to control

the old "gang spirit" and to build up the moral and physical health of children living in the congested districts is through well-equipped playgrounds judiciously distributed throughout the town or city.

Waste Disposal

Is your method of collection and disposal of municipal garbage satisfactory and economical? One of the livest questions in municipalities to-day is the proper method of collecting and disposing of garbage. There are a number of systems of collection and methods of disposal to choose from, which each city must study from the standpoint of local conditions.

Is your method of sewage disposal effective, or do you need to adopt some new system? Sewage disposal has undergone almost revolutionary changes within the last ten years, so that now the sewage of a large city may be disposed of in a much smaller area than heretofore and with less nuisance, and the sewage of a small city can be treated properly in an exceedingly small area or within one inconspicuous building.

Municipal Markets

Have you municipal markets, and, if so, are they satisfactory? An increasingly large number of American cities have instituted markets under the direct control and supervision of the city. These have greatly reduced prices and have gone a long way towards helping the taxpayer of moderate means during the period of high prices.

City Automobiles

Does your city effectively and economically care for and regulate the use of automobiles owned by it and used by officials and employees? This is an important matter, and the adoption of a municipal taxi service has proved of great economy in a large number of cities.

Cooperation and Planning Bring Many Improvements

New Water Pipe, Street Lighting and Gas-Mains for Prescott, Arizona

By M. R. Hirshfeld

THE business streets of the city of Prescott, Ariz., for a number of months resembled nothing else so much as a shell-torn village in Belgium during the late World War, with this exception—the tearing up and the work done were constructive rather than destructive.

Preparatory to paving fourteen blocks of the business district, the city installed new water-mains, $22,000 worth of 10-inch cast iron pipe being put in at a cost of $10,000 for labor. Despite about two weeks of very wet weather, when the trenches had to be drained numerous times and much trouble with caving trenches was encountered, the work was completed well within the specified time limit. With the filling in of the trenches, Prescott streets began to resume a normal appearance.

While the city was installing these new water-mains to replace the steel pipe that had been laid nearly 40 years ago, the Prescott Gas and Electric Company installed in the business district gas-mains large enough to serve the city of Prescott until it has increased in size three times. The gas company also made repairs and replacements where necessary in the residence districts. The result is that now that the street paving has finally been done, it is down for good, and little tearing will have to be done later to permit laying or repairing gas- or water-mains.

Better-Lighted Streets

Next on the program of civic improvements was the street lighting. Prescott's streets were illuminated with the old-fashioned high swinging lights placed at the intersections of the streets, save in a part of the residence district, where modern ornamental iron standards had already been installed. The City Council let a contract calling for ornamental standards for the

A TYPICAL SCENE IN PRESCOTT WHEN GAS AND WATER MAINS WERE BEING LAID OR RENEWED PRIOR TO PAVING BUSINESS STREETS

business district and for a few additional blocks in the residence district. Novalux globes were specified for use in the down-town district. A local electrical company was given the contract for the lighting, at a price of approximately $12,000.

Following the installation of the lights will come the paving of all the down-town streets. It had been hoped to have that work completed by January, 1922, but the City Council found the bids of local and foreign contractors were too high. The lowest bid, of $3.68 a square foot, was refused, and the Council decided it was too late in the fall to ask for new bids. Now the work must necessarily be delayed until the early spring, at which time it is the plan of the city to rush it to completion. In the meantime, Arthur J. Kline, the City Engineer, has been instructed to obtain figures on all-concrete, concrete with bitulithic base, and black base paving. The sum of $200,000 has been set aside by the city to be expended on the paving. Some paving work has already been done this year on one of the residence streets, Warrenite-Bitulithic surfacing having been used. The cost was $85,000, and ornamental lights on the same street were installed at a cost of $7,260.

In the early spring one new bridge is to be constructed, a reinforced concrete structure, for which a sum of $20,000 has been appropriated. A group of local construction engineers have entered bids for its construction.

On the city budget for the current year, provision was made for a children's playground, sufficient funds having been appropriated to make the first purchase of playground equipment. This is to be supplemented by popular subscription during the winter, and early spring should see the city ready to install such equipment.

Heretofore, the supply of water in the city of Prescott during the dry summer months has been something of a problem. Following the planning of the other civic improvements, the city last year voted $350,000 water bonds. This sum is to be expended in the construction of three additional reservoir dams and pumping plants. About $50,000 is to be used on a reservoir dam at Banning Creek, three miles from Prescott, an additional $16,000 has been set aside for replacing old pipe and laying new, and the remaining $275,000 will be used to dam Granite Creek and the Hassayampa River.

That the United States Government intends to cooperate with the city of Prescott in this elaborate program of municipal improvement can be seen in the tentative plans being prepared for the erection of a new post office, one that will be in keeping with the state and county buildings in the city. The Government already has purchased a site for the new post office directly opposite the county court house, which is situated in the center of a parked block in the heart of the city.

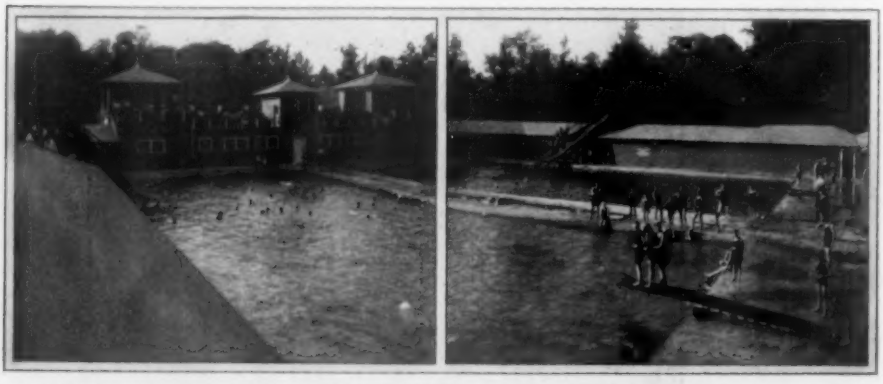
New Swimming Pools in Birmingham, Alabama

City and Local Manufacturer Jointly Finance Two Large Concrete Swimming Pools Near Industrial Section

By Helen Bethea

IN the summer of 1921 the city of Birmingham, Ala., and the Tennessee Iron and Coal Company completed two swimming pools at Ensley, within the limits of the city and at a convenient walking distance from the industrial section, supported by the plants and the mining interests of the company. The completed pools cost $45,000, the company furnishing $25,000 and the city paying the remainder of the expense. The pools measure 50 x 100 feet each and are 3½ feet deep at the shallow end and 9 feet deep at the other. They are separated by a 12-foot concrete walk.

The pools are not covered, but buildings practically surround them. At one end is the filtration plant and at the other the gallery for spectators. On both sides are the bath-houses, administration building, and lockers, so that the pools are entirely surrounded and are accessible only through doors and passages.



THESE TWO POOLS FURNISH SAFE RECREATION TO THE PEOPLE OF BIRMINGHAM, ALA.

The capacity of each pool is approximately 250,000 gallons of water. They are filled with filtered water from the city supply. The water is then pumped from the lowest point in each pool by a centrifugal pump and forced through pressure filters and thence to the ultra violet ray sterilizers, from which it is returned to the pool. The piping is so arranged that the water is returned to the pool through four orifices located at the shallow end of each pool near the floor. By this means almost perfect circulation is maintained, as is demonstrated by the fact that bathing caps, belts and other articles lost in any part of the pools always drift rapidly to the grating over the suction pipe to the pump.

The water in both pools is turned over every 24 hours, and although the attendance is from 300 to 2,000 per day, bacteriological tests have shown the water to be satisfactory at all times. Since the pools have been in use, they have been emptied and scrubbed every two weeks. This is not necessary from a sanitary point of view, but is highly desirable because, since the pool is not covered, moss or algae grow along the sides, making the water appear very dark in color even though samples taken from the pool are perfectly clear when examined in a glass cylinder.

When the pools are emptied, the sides and bottom are washed and scrubbed with brooms and scoured with a hose. Chloride of lime is sprinkled over the exposed surfaces. The addition of a small amount of bluestone to the water has been found to materially retard the growth of the moss.

Interest in Annual Reports

A City Manager and a Water-Works Superintendent Strive for Reader Interest

THE first semi-annual report of Harrison G. Otis, City Manager, Clarksburg, W. Va., to the City Council has recently appeared in pamphlet form and contains features that are somewhat out of the ordinary. This report was ordered published by the City Council, and 5,000 copies were distributed from house to house by the Boy Scouts without charge. Each copy contained a reply card addressed to the City Manager and provided with space for the filing of suggestions and complaints.

The report is only 24 pages in length and is written in simple language, with short paragraphs and frequent headlines, and with only the small amount of figures necessary to bring out the desired comparisons. At the beginning is a full list of the personnel of the city government, followed by an alphabetical schedule of all the items connected with the operation of the municipal government concerning which the public most often seek information. With this schedule the telephone number and the official to be called in each case are given.

Following the list of city officials comes a "Foreword and Summary," epitomizing in single sentences the chief points of interest in the report proper. The report itself sets forth the progress which has been made under the new form of government. Frequent bold-faced subheads separate the stories into easily digestible portions.

A tentative program for street improvement lists about eighty streets which it is hoped the city will be able to pave during the next two years. This is followed by a detailed outline of the proposed bond issue and a schedule of improvement procedure which boils down several pages of legal red tape into fifteen short sentences. The back page of the report is devoted to "Do Drops" as presented herewith.

"DO DROPS"

To Refresh the Memory and to Revive the Spirit of Co-operation

Do drop the habit of making messenger boys of your Councilman; Phone "92" instead.

Do drop around to the Colonial Building and get acquainted with your city employees.

Do drop a line to the City Manager, making suggestions and complaints, but do not forget to sign your name.

Do drop the custom of calling up city officials at their homes, outside of office hours, except in emergency cases.

Do drop in and make the City Treasurer glad by squaring up old accounts, if you owe the City money.

Do drop the idea that the police can make and keep the town clean morally, without your help.

Do drop a hint to the police judge when you suspect law violation; your confidence will be respected if requested.

Do drop a card to the City Physician, or call "331," whenever you learn of any reportable disease, even a very mild case

Do drop the notion that the Health Department is designed as a spite bureau, for use in "neighborly" altercations.

Do drop your garbage and other trash in proper cans for city collection, and not in the alley or over the river bank.

Do drop the hope that all street and sewer complaints can be given immediate attention; there are 28,000 other folks in town.

Do drop the theory that a few soft coal cinders on a soft mud road will make a good pavement.

Do drop over on Hewes Street and see our "central fire station." Then work for one we need not be ashamed of.

Do drop in at the Public Library some afternoon or evening and see what we have and what we need.

Do drop your work for two minutes more and lend a constructive thought to your city government.

Do drop the attached coupon into the mail box or bring it with you when you call at the Colonial Building

Do drop your "hammer" and pick up your "saw" and "Let's go."

The reaction of the taxpayer to this informal plea for cooperation is exceedingly interesting. The City Manager has received scores of reply cards which have been mailed by citizens after reading the report. The suggestions deal with almost all the stages of municipal construction and administration. Requests for street lights, street and sewer repair and improvements of various sorts are common. One lady suggests "Fifty dogs less in Goff Plaza" as a desirable city improvement. Several new customers for the city's waste collection system have resulted from the "Do Drops." The proposed bond issue is the basis of many of the replies received.

In addition to the written complaints and suggestions received, a large number of

citizens, who very likely have learned through the report who are the proper officials to deal with various matters, have visited the city offices for personal interviews. The experiment of printing and distributing a reasonably interesting and easily read city report has resulted in increasing the number of contacts between the city government and the citizens and has been found quite worth while. City officials interested in securing copies of this report as a sample for consideration and study, may write to Harrison G. Otis, City Manager, Clarksburg, W. Va., for a copy.

Finding Out Who Read the Report

The extent to which citizens usually read municipal reports is well illustrated in a recent example cited by Beekman C. Little, Superintendent of Water-Works, Rochester, N. Y. Year after year he had been writing what is called an "Annual Report of the Water Bureau" for the Mayor's annual message. He had the idea that nobody ever read the report, and wanted to test that statement, so, hunting through the dictionary for some outlandish word which might attract attention, he found the word 'gallimaufry" [a hash or hodge-podge, Ed.] and used it in describing an old small water-works plant which the city had absorbed in extending its territory. He found out very quickly that the reporters at least read the message, for they jumped at that word like a trout at a fly and, through the locals columns and the editorials of the Rochester papers, a great deal of publicity was given to "gallimaufry" and the Water-Works Superintendent. Mr. Little states, however, that in spite of this, not many people read the report.

City departmental reports are frequently garbled in the newspapers, and therefore the preparation of a short, interesting report which can be distributed at little or no expense through the cooperation of that admirable organization, the Boy Scouts, opens a field for the serious consideration of municipal officials. By distributing the report direct to the homes, the city official is sure that his message has reached the citizen and the taxpayer in exactly the form in which it was prepared.

School Buildings Make Costly Bonfires

A Warning—Most of These Fires Occurred in Small Towns and Cities

By Norman M. Stineman

A FAIRLY close watch on newspapers during December and parts of November and January, when the cold weather season was upon us, revealed the complete destruction by fire of thirty-one school buildings in various parts of the United States, with a total reported loss of $2,600,000. A number of other school fires which caused damage of varying degrees without causing complete destruction are not included in the foregoing figures. While these reports are unofficial, it is altogether likely that the cost of replacing the destroyed buildings will be far greater than the value of the old structures. For instance, the loss reported on the high school at Millinocket, Me., was $60,000, while the school board is now having plans prepared for a fire-proof building of much larger dimensions and greatly improved facilities, which will cost several times that amount.

The schools reported as completely destroyed by fire are the following:

High school at England, Ark., destroyed November 10, 1921. Loss $50,000.

High school at Millinocket, Me., destroyed November 13. Loss $60,000. Fire started in furnace room. Plans under preparation for much larger fire-proof building.

High school at Venus, Tex., destroyed November 19. Loss $45,000.

High school at Lake Odessa, Mich., destroyed December 4. Loss $60,000; insurance $42,000. School officials having plans prepared for a fire-proof building.

High school at Cold Spring, Ky., destroyed December 6. Loss $30,000; insurance only $3,000. This was a two-story brick building built in 1850.

Village public school at Aberdeen, Tex., destroyed December 6. Loss $3,000. Cause of fire unknown.

High school at Marshall, Mo., destroyed December 7. Loss $70,000; insurance $36,000. Cause of fire unknown.

College building at Wilberforce University, Wilberforce, Ohio, destroyed December 7. Loss $300,000. Cause unknown.

High school at Scotts, N. C., destroyed December 8. Loss $20,000; insurance $12,500. Fire started in fur-

nace room. The building had just been completed in time for the opening of school last fall and was one of the best-equipped high schools in that section of the state.

High school at Roy, N. Mex., destroyed December 9. Loss $45,000; insurance carried by the contractor. The building was under construction and nearly completed, and was to be occupied January 2, 1922.

High school at Santa Rosa, Calif., destroyed December 17. Loss $75,000.

High school at Houghton, Mich., destroyed December 18. Loss $150,000; insurance $115,000. Fire started in basement. Built in 1899.

High school at Presque Isle, Me., destroyed December 23. Loss $60,000.

Kentucky Military Institute at Lyndon, Ky., destroyed in December. Loss $100,000.

Henry Lord Grammar School at Fall River, Mass., destroyed December 26. Loss $300,000. The building was under construction and nearly completed. Fire probably due to defective wiring.

Nine-room high school at Sinking Springs, Pa., destroyed December 26. Loss $60,000.

Lewis and Clark Grade School at Wenatchee, Wash., destroyed December 27. Loss $30,000; fully insured. Fire started in upper part of building, probably from defective wiring.

High school at Maquoketa, Iowa, destroyed December 29. Loss $80,000. Fire started in fuel room.

Administration building of Lyndon Institute, Lyndonville, Vt., destroyed January 2. Loss $70,000; insurance $42,000. Cause unknown.

High school at Troy, Pa., destroyed January 6. Loss $100,000; insurance $65,000. Caused by defective chimney.

Independent school at Itasca, Tex., destroyed January 6. Loss $10,000; insurance carried.

Blackstone College for Girls at Blackstone, Va., destroyed January 9. Loss $175,000; insured. Building destroyed was only one remaining, a companion structure having been destroyed by fire in May, 1920. Will rebuild fire-proof.

Building of Morristown Normal and Industrial College, Morristown, Tenn., destroyed January 10. Loss $100,000.

High and grade school at Barnum, Minn., destroyed early in January. Loss $75,000.

High and grade school at Clarksburg, Tenn., destroyed January 12. Loss $10,000; insurance $5,000. School was built only five years ago.

High and grade school at Otter Lake, Mich., destroyed January 13. Loss $40,000. Building was completed only two years ago. Cause of fire undetermined.

Administration building of Blackstone Military Institute, Blackstone, Va., destroyed January 14. Loss $150,000. Probably due to defective wiring. Fire occurred only five days after burning of a girls' school in the same city.

St. Bartholomew's school at Columbus, Ind., destroyed January 17. Amount of loss not reported. Fire started in basement. First intimation of fire came when flames and smoke burst through classroom floors occupied by the children.

High school at Wallowa, Ore., destroyed January 19. Loss $50,000; insurance $34,000. Built in 1910, and one of the best-equipped high schools in eastern Oregon.

High school at Niagara Falls, N. Y., destroyed January 24. Loss $200,000; insured. Fire started in chemistry laboratory.

Eight-room public school at Port Morris, N. J., destroyed January 25. Loss $60,000; insurance $28,000. Caused by defective chimney.

Perhaps the most noticeable fact regarding these fires is that, with two exceptions, all of them occurred in comparatively small cities and towns. This bears out the statement made in an article on page 469 of the November, 1920, issue of THE AMERICAN CITY to the effect that fire-proof construction for school buildings is even more necessary in smaller towns and cities and in the open country than in larger cities. In the smaller communities fire protection is either entirely absent or, at the most, is not as prompt or effective as in large cities having well-organized fire departments. This is not an argument for non-fire-proof construction of schools in large cities, for even in those communities an occasional disastrous fire proves the need of fire-safe schools. Then, too, reports are not lacking of instances where fire-proof construction prevented the spread of school fires that might otherwise have resulted in costly damage or complete destruction, thereby proving that fire-proof construction is a good investment.

It is extremely unfortunate that we continue to burn up our schools while many cities are putting forth every effort toward the raising of funds for new schools, in the attempt to catch up with the increased school population. It is still more unfortunate that many school boards continue the penny-wise and pound-foolish policy of building new schools of combustible construction, on the theory that they can be built for less money. Perhaps they can be; but the slight saving in first cost is out of all proportion to the advantages that might be gained by spending a little more money on first cost, thereby giving the community a school that will not burn, that will be a permanent investment, will command low insurance rates and require but small maintenance expenditures.

Other school boards are awake to the lessons taught by the fires, for news comes from Millinocket, Me., and Lake Odessa, Mich., to the effect that the new schools planned to replace the destroyed buildings will be as fire-proof as modern design and construction methods can make them. At Champaign, Ill., the Chamber of Commerce has decided not to wait for a disastrous fire, for a committee of the Chamber is investigating existing schools with the idea of making them more fire-resistive. In view of the conditions so forcibly demonstrated by the long casualty list of destroyed buildings, school boards that continue to build combustible structures are failing utterly in their duty to the community.

The Municipal Forest of Malone, N. Y.

By J. H. King
Chairman Forestry Commission, Malone, N. Y.

UNDER a New York State law of 1914, the village of Malone took up the reforestation of 35 acres of denuded pine land, given to the village by the Malone Light and Power Company. The state furnished free of charge, with the exception of transportation, 300,000 four-year-old transplants, made up of white and Scotch pine and some 500 North Carolina poplar cuttings. The young trees were set out in seven hours by some fifty high school boys working under the supervision of a representative of the State College of Forestry at Syracuse. This was in April, 1920. The spring of 1921 found the poplars all dead, and all but about 3 per cent of the pines living. The result was so encouraging that the Chamber of Commerce planned to continue the reforestation last spring. It was, however, impossible to secure suitable planting stock. On account of the dry season it was not deemed advisable to plant in the fall, so the Chamber planned to go on with the work this spring.

There are probably 35 acres more of the same type of barren land in the gift of the Light and Power Company, which it is intended to reforest, so that in the end there will be a forest of not less than 100,000 trees, and in time the village will have a source of revenue in the reforested area if it is handled properly.

The high hill on which the village reservoir is located, known as the Pinnacle, is to be covered with trees. When this is completed, it will be one of the beauty spots of the town.

The municipal or town forest idea is a rather new thing in the United States, but it has been tried and found profitable in Europe, where many towns derive sufficient revenue from their public forests to largely offset the taxes. Many small towns in the Black Forest of Germany have no taxes to pay, because of their public forests, and in some instances the citizens even receive a dividend instead of a tax bill.

On account of the large amount of idle land suitable only for forest growth in many sections of New York, and also because of the scarcity of our timber supply, it is believed that other towns could well follow the example of Malone in establishing a municipal forest.

PLANTING TREES IN A DISTRICT NEAR LACONIA, N. Y., ON LAND SIMILAR TO THE MALONE PLANTATION

PLANT MUNICIPAL FORESTS AND PROTECT THEM

One tree will make a million matches; one match may destroy a million trees.

Covering a Concrete Reservoir Saves Money

New Reservoir Reduces Fire Hazard—Covering Protects Health

By L. J. Jellison

THE city of Dubuque, Iowa, has adequately protected its main business district from the scourge of fire and provided for the health of citizens through the completion of a 7,500,000-gallon covered reservoir located on an eminence 250 feet above the valley business center and a few blocks away from main factories and business places. This concrete reservoir with its slightly arched cover is 180 feet in diameter and 41 feet in depth. The cost for the reservoir proper was $82,000, and the concrete cover was $32,000, a total of $114,000.

The reservoir tank was completed several years ago, but because of its open top it was impossible to keep the water clean. In summer it was necessary to clean the tank every ten days. The fire hazard, due to putting the tank out of commission, was increased. Thus the reservoir was an expensive proposition, through labor and loss of water incident to the cleaning process. The full 7,500,000-gallon storage capacity now insures a main pressure of from 85 to 95 pounds, whereas under old conditions 65 to 75 pounds pressure was all that could be maintained with safety.

Benefits to the city from the improvement have been four-fold. The town has been given a clean bill of health. Future expense of cleaning the reservoir during the summer months has been done away with, through elimination of algae growth and possible contamination. Fire underwriters have given the city a number of credit points that will in time reduce insurance rates. The construction of the arched top is such that at some future date it can be utilized as the foundation of a community building, or as a skating rink.

Construction of the Reservoir

The reservoir was hewn from practically solid rock, and thus a saving of $80,000 was effected through its location at the present site. Proposals made at the time it was contemplated favored a high bluff, adjacent to the water-works plant near Eagle Point, and removed from the territory to be served by more than two miles. With friction losses so high in pumping such a distance, engineers determined the greater value of the present site overlooking the business artery of the city, obviating the necessity of pumping the water a second time, and allowing transference of many patrons from high to low service.

The main pumping station of the city is located at Eagle Point, where sheer bluffs rise along the shores of the Mississippi River. The water-supply is obtained from sand and gravel wells ranging in depth from 100 feet downward. A surface storage reservoir of 650,000-gallon capacity acts as a mediary to the distribution system. There are two services, high and low. Formerly the low service was limited by the level of water in a reservoir of 1,000,000-gallon capacity built to impound water from mine workings. High-service pumps, electrically driven, took the water from the level reservoir.

With the reservoir completed and in its present location, the high friction loss as a result of the long-distance flow has been eliminated. An almost perfect balance is

maintained in all parts of the city, according to needs, and with only a 3-pound pressure loss as against a 41-pound pressure loss had the reservoir been erected on the site first chosen.

In constructing the reservoir, contractors were confronted with a limestone rock and homogeneous clay formation. A circular reservoir was decided upon because of excellent approach to property, plat and allowance for a new high-service pumping station to be built in the future.

The reservoir bottom was made level with rock strata and with only enough pitch to drain. The lower wall was built solidly against rock. Despite the fact that the upper portions of the wall were to be surrounded with clay and rock to its top, the wall was made just as strong as though no earth were to be against it. A thin wall, practically without horizontal reinforcement wherever it was against solid rock, was erected. Stresses in the wall above the rock were transmitted to solid rock by means of buttresses. Steel dams ⅛ x 8 inches, to prevent seepage, were provided for 4-foot concrete wall sections extending without break around the reservoir.

A 24-inch cast iron pipe acts as inlet and outlet for the reservoir. A check valve opens in and out of the reservoir. Incoming water is circulated around the reservoir, and produces as much stirring as possible without artificial means. The flow out of the reservoir is from all directions. The valve arrangement is such as to give adequate circulation within the reservoir at minimum cost.

Enforcing the Standard Weight Bread Law in Los Angeles County

At the Fourteenth Annual Conference on Weights and Measures, the substance of which has just been made public by the Bureau of Standards of the Department of Commerce, in Miscellaneous Publication No. 48, Weights and Measures, Charles M. Fuller, Sealer of Weights and Measures of Los Angeles County, Calif., gave some interesting data in regard to the enforcement of bread legislation, including tolerances, the result of five years' successful enforcement of a standard weight bread law.

The law provides that the standard weight of all loaves of bread within 12 hours after baking shall be 16 ounces, 24 ounces, or multiples of the 16-ounce size. A tolerance of one ounce above the standard weight is allowed for each 16-ounce unit, but no stated tolerance below the standard weight is allowed, because, were there such a tolerance, certain unscrupulous bakers would not hesitate to scale their bread that amount short. At least 25 loaves are weighed, and the average taken is established as the standard weight. If there is any doubt about the average weight, several hundred loaves are often scaled.

When the bread is found short and the baker has had a previous good record, all bread as much as an ounce under weight is seized for distribution to charitable institutions, and the baker is given a warning. If the offense is repeated, the bread is confiscated and the baker is prosecuted as well. All weighings are entered on cards printed for that purpose, and these are filed under the name of the bakery so that a record of every place of business is readily available.

In the enforcement of this act, 25 bakers have been convicted, $535 in fines has been collected, and several thousand loaves of bread have been confiscated and turned over to charity. The act has worked out so successfully in eliminating the unfair competition of bakers who would cut the price by selling an underweight loaf, that even those firms that were first opposed to the standard weight bread law are now in favor of it. At a meeting of the Wholesale Retail Bakers Association of California, a unanimous resolution was passed endorsing this law.

Municipal Tennis Courts in London

An example of the interest shown in tennis in England is gleaned from the fact that London has 589 tennis courts under municipal control, and although the fee for playing is quite small, the receipts from these courts last year totaled $40,000.

The Use of Local Mineral Aggregate in Bituminous Macadam Roads

By Major W. A. Welch

Chief Engineer and General Manager of the Palisades Interstate Park Commission of New York and New Jersey

THE proper use of local mineral aggregate in bituminous road construction means great economy in these days of high transportation and labor costs. It is possible to build good bituminous macadam road surfaces with practically any stone or coarse gravel found in the United States, provided this aggregate is free from loam, dust and silt when used.

> It would seem much wiser for the engineer to carefully study all available local mineral aggregates and prepare his specifications to permit the greatest possible use of them in his surfaces than to fall into the easier method of copying standard specifications, thus compelling contractors to import these aggregates and so greatly increase costs. Better put this extra money in your subgrade work, as that is really your road.
>
> It is possible to build good bituminous macadam road surfaces with practically any stone or coarse gravel found in the United States, provided this aggregate is free from loam, dust and silt when used.

The Subgrade Is the Real Road

The bituminous mixture is, at best, a wearing surface, like the rails of a railroad, and it must be thoroughly and properly supported by the subgrade or it will fail. The subgrade is the real road. It must be properly placed, thoroughly drained, well settled and compacted, and on such a subgrade, except on main trunk roads, a bituminous surface can be laid successfully with a mineral aggregate of comparatively low crushing strength. It is, of course, very necessary to thoroughly bond this aggregate and keep it free from moisture, dirt and dust, for these are the greatest enemies of proper bonding.

A railway engineer establishes the size and weight of his rails in accordance with the weight and speed of his traffic. On main trunk lines these rails are made heavy enough to carry the heavy, fast traffic, in spite of minor defects in the subgrade, but on the branch lines and feeders the rails are lighter for economy's sake. Experience has taught these things and many others to the railway builders, and the highway engineer should profit by these years of experience and experiment, for our highways have become very like our railways. Main trunk lines should have wearing surfaces which will carry any traffic and any speed, without failure, in spite of minor defects in the subgrade, but such surfaces are not necessary on minor roads, and it is not economy to build them.

The safe crushing strength of trap rock or basalt averages approximately 350 tons per square foot; granites, 350 tons per square foot; limestones and marbles, 300 tons per square foot; sandstones, 215 tons per square foot; good air-cooled slag, 300 tons per square foot; and ordinary chalk, 15 tons per square foot.

Practically all the stone in this country comes within these limits, and all of it, save the chalk and very soft sandstones, will make good bituminous macadam road surfaces. Specifications must vary with the types; the softer aggregates must be used in larger sizes, greater care must be exercised with them to keep out the dust, and the rolling must be governed by the type of aggregate. The harder stone can be thoroughly compacted by heavy rollers and still be penetrated and thoroughly bonded by the asphalt or tar, but the softer stones, when used in penetration work, must not be rolled as hard, or they will not allow the binder to properly fill the voids. Care must be taken to keep the aggregate even, as many

quarries have seams or strata of soft shaley stone, which, if put in with the better material, will cause trouble. More care must be taken with the top course or seal coat when the softer aggregates are used, to insure a thorough coating on the actual wearing surface.

The Cause of Failures

There is little accurate information obtainable on this subject. Few experimental sections of such surfaces have been laid and watched. Of all the failures of bituminous macadam surfaces which have come to the writer's notice, none have been due in any way to the character of the mineral aggregate. By far the greater number of these failures are due to bad subgrade, and the others to poor workmanship, dirt and dust in the aggregate or poor bonding, because of improper rolling and penetration.

Many of these failures are caused by frost action in the subgrade and by improper drainage, which permits this frost to heave up the surface; or by the gradual accumulation of moisture in poorly drained places in the subgrade, which destroys the support of the wearing surface through no fault of that surface.

Other failures were plainly due to improper mixing or penetration, from careless workmanship; others to the careless use of dirty aggregate, so full of loam, silt or dust that the binder was not able to reach the stone; or the aggregate was badly graded; or the binder was bad or improperly heated. One sheet asphalt failure was due to the use of glacial silt as the only aggregate, ground as fine as cement.

LAYING THE TELFORD BASE OF A BITUMINOUS MACADAM PAVEMENT IN A HEAVILY TRAVELED SECTION OF THE INTERSTATE PALISADES PARK RESERVATION, NEW JERSEY

Some Successful Instances

I know of one piece of penetration surface in which three experimental sections were laid, each of about 500 feet. In these sections were used trap rock or very hard basalt, limestone, just an average grade, and sandstone of good character, while on all the rest of the road granite of good grade was used. This surface was laid in three layers of 2 inches, 2 inches and 1 inch. Two years after opening, a seal coat was put on, and nothing has been done with it in the last six years. The same materials were used on the seal coat, and I can distinguish no difference at all in these four sections of pavement. This road has carried as many as 400,000 cars and trucks per season of 8 months, and the pavement is in

perfect condition; but it is laid on a perfect subgrade and 18 inches of Telford.

Between the entrance to a ferry slip and the foot of a mile-and-a-half-long hill, brick paved on concrete base, with grades from 5 to 8 per cent, there is a rock fill 300 feet long. As this fill was expected to settle, it was decided to lay a temporary cinder surface on it. Three inches of clean steam cinders were spread and rolled with a 1,000-pound roller, and bituminous binder was applied at the rate of one gallon per yard and lightly covered with more cinders. Two years later another application of ½-gallon per yard of binder was made and lightly covered with cinders, and at the end of another two years this 300 feet of temporary surface is in perfect condition. More than 330,000 cars and trucks used it during the last 8 months, and yet the crushing strength of cinders is not great.

In eastern Ohio and western Pennsylvania, much slag has been used and, when treated like limestone, has made good surfaces. Many surfaces have been laid with crushed gravel, which is, of course, just like good crushed stone, if properly screened and washed before crushing. The usual specification for this aggregate requires 60 per cent more of material to have angular fragments, but some surfaces have been laid with gravel without crushing, and when the aggregate was clean, properly sized and bonded, the surfaces have been good. In Massachusetts and other New England states, this uncrushed gravel aggregate has been extensively used in the so-called tar concrete pavements, with success when the workmanship was good. Many old gravel roads have been successfully surfaced with only gravel aggregate. Good workmanship means more in bituminous macadam surfaces than mineral aggregate does.

It would seem much wiser for the engineer to carefully study all available local mineral aggregate and prepare his specifications to permit the greatest possible use of it in his surface, than to fall into the easier method of copying standard specifications and so compelling contractors to import these aggregates and thus greatly increase costs.

Better put this extra money into your subgrade work, for that is really your road.

Acknowledgment.—From a paper read at the Good Roads Congress, Chicago, Ill., January, 1922.

Changes in Road Surfaces

When Adam MacAdam in 1770 developed the road surface which to this day bears his name, he was so far in advance of the age that people demurred at using so expensive and unnecessarily hard a type of surface. To-day we find that macadam paving ranks with the cheaper and "soft" types entirely unsuitable for much of the traffic which passes over it. We must also bear in mind that traffic has changed. The horse-drawn vehicle has almost entirely passed out of existence and has been replaced by the gasoline-propelled vehicle, which carries loads many times in excess of those carried by the horse-drawn type.

The macadam road, like the horse-drawn vehicle, is "out of date," and surfaces are required to-day which will withstand the weight of the present-day traffic, although in some localities where the traffic is no greater in comparison than that of the "horse, mule or ox" age, macadam can still be used with entire satisfaction, as are gravel, sand, clay and other "soft" types.

In the past ten years there has been a great change in the types of roads suitable for traffic conditions on main travelled highways. In 1910, plain and surface-treated macadam were considered among the highest types of paving for country roads, and a large percentage of the mileage was of the two types. There was a small mileage of brick and concrete and a somewhat greater mileage of bituminous macadam, but plain and surface-treated macadam were the predominant types of hard-treated roads. How great the change has been is shown by figures recently issued by the Bureau of Public Roads. On Federal Aid roads completed between 1916 and 1920 only 2.9 per cent of the total area paved was plain and surface-treated macadam. The types which formerly constituted such a small part of the mileage were as follows: bituminous macadam, 3.1 per cent; bituminous concrete, 6.3 per cent; cement concrete, 19.3 per cent; brick, 4.1 per cent.—*Highway News Digest.*

An Infant Hygiene Record Card

By Dr. A. O. Peters
Commissioner of Health, Dayton, Ohio

DAYTON'S public health nursing service operates with ten nurses of the Visiting Nurses' Association and ten city nurses under the supervision of the Visiting Nurses' Association and the Commissioner of Health. The nurses do all kinds of nursing in their districts except school work. The card shown below, with a certificate of birth, is taken to the home of every child—whether of well-to-do or of indigent family—whose birth is reported. This gives the nurse entry into every such home, as the infant hygiene record cards can be obtained in no other way.

Division of Health and Visiting Nurses Association

DAYTON, OHIO

INFANT HYGIENE RECORD

Name of Child ..... Address ..... Date of Birth ..... Birth Weight .....

Parents ..... No. of Child ..... Delivered by ..... Instrumental? .....

Eye Prophylactic? ..... Breast-fed? ..... Intervals ..... If bottle-fed, give details .....

Regulation of Light ..... Temp. ..... Ventilation ..... Sanitation .....

Hours of Sleep ..... How Bathed? ..... Stools, Number and Character .....

Is Vaccination intended? ..... Are regular physical examinations intended? ..... Circumcised? .....

Circumstances ..... Reaction to visit ..... Date of visit ..... Name of Nurse .....

REMARKS:

Dates of Re-visits	Name of Nurse	REPORT

HELP SAVE THE BABIES

Through the co-operation of the medical profession and parents with the Division of Health and the Visiting Nurses Association, the infant death rate in Dayton has been reduced from 134 per one thousand living births in 1913 to 83 in 1920. This is a saving of 130 infant lives every year.

It is well known that any infant death rate above 50 or 60 indicates that some babies are dying from preventable causes. This means that every year Dayton is still losing from 60 to 100 babies whose lives should be saved. Every baby—no matter how well he may seem—needs as constant care TO KEEP HIM WELL as any sick person needs to restore health. If you will faithfully keep the records on this chart for which it provides, it will greatly assist your physician in treating your baby should it become sick and will help him to prescribe proper care to prevent sickness. At any time the visiting nurse will gladly assist you in carrying out the orders given by your physician for the care of your baby. Call Main 2400.

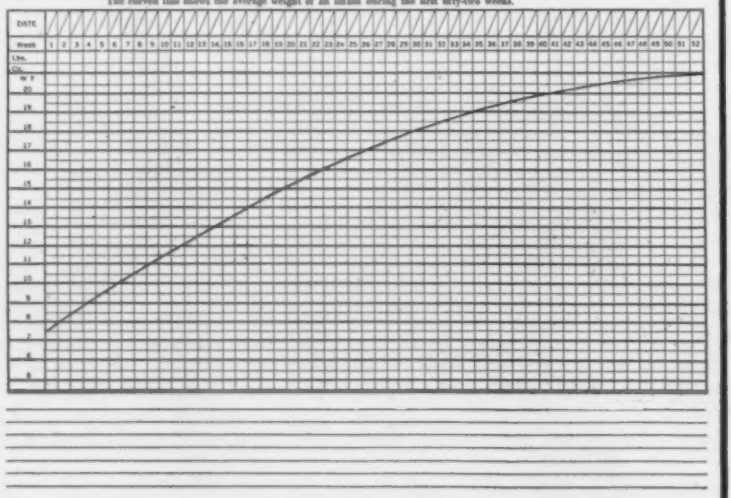
CHART BELOW THE WEIGHT OF YOUR CHILD FROM WEEK TO WEEK AND COMPARE WITH THE AVERAGE CURVE

The curved line shows the average weight of an infant during the first fifty-two weeks.

REMINDERS:

(1) Regular feeding, bathing and sleep
(2) Regular bowel movement
(3) Weigh each week. There should be a gradual gain in weight
(4) Give plenty of cool, boiled water
(5) Use proper clothing
(6) Don't use pacifiers
(7) Forbid mouth kissing
(8) Keep baby off dirty floor
(9) Have plenty of ventilation—night and day
(10) No food nor medicine except that prescribed by the physician
(11) Keep flies away
(12) Regular examination, (monthly or oftener), by the physician

Note in space to the right any illness contracted by your child, giving dates, physician's name, if called, and other facts



Making the City Plan Effective

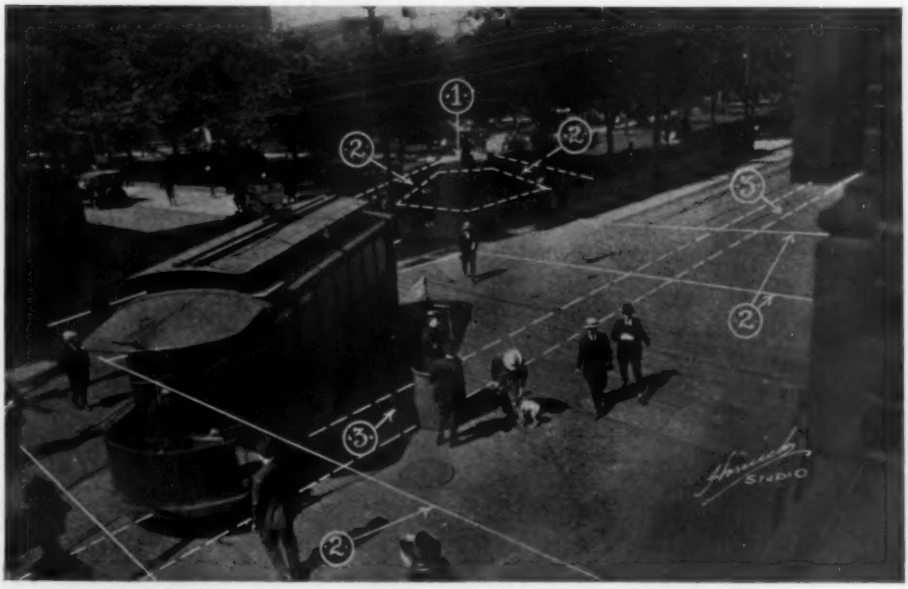
By Leo J. Buettner
Secretary, City Planning Commission, Johnstown, Pa.

IN the early stages of the city planning work in the city of Johnstown, Pa., in the year 1914, the Planning Commission realized that it was necessary to have some sort of guide in its work and requested that the City Council make an appropriation for this purpose. An appropriation was made, and the Commission employed experts to make a comprehensive plan and report of the city of Johnstown and surrounding boroughs.

When these experts started to work, the Commission concluded that the report and recommendations would have to be made in such a way as to appeal to the citizens of the community. With this idea in mind, it was suggested that only Johnstown views be used to illustrate the plan and report; in other words, that photographs be taken of conditions in this city as they existed, and that white lines on the photographs show what was recommended in the way of improvement.

When a citizen of Johnstown opens this book, he immediately recognizes the place where some improvement is planned and also gets an idea of the effect of the improvement. This method of illustrating fixes the proposed change or improvement in the mind of the citizen so clearly that he will not easily forget it. Many other cities are now following with great success this idea of illustrating city planning projects.

The report and plan was printed and distributed among the leading citizens and business men of the city. Unfortunately, however, the Commission made the mistake that many others have made—of not having enough copies of the report printed. It is when the report is first published that citizens are anxious to get copies and are interested in knowing what it contains. After the first edition is exhausted, it is usually hard to get another appropriation to cover the cost of printing additional copies, and the citizens do not display the same degree



JAY-WALKERS, MAIN AND FRANKLIN STREETS, JOHNSTOWN, PA.

1. The source of the trouble: diagonal entrance to Central Park. 2. The remedy: eliminate diagonal entrance; create side entrances; establish permanent pedestrian lanes; introduce semaphore system, illuminated at night. 3. Future car tracks.

of interest that they did when the first edition was being distributed.

In connection with the report and plan, the experts made a large map, 10 x 15 feet in size. This map was erected in the city planning headquarters and covers one side of the room. On this map every recommendation made in the report is shown in colors. The map is one of the best means of educating the people of the city as to the various improvements that have been proposed. The Commission never misses an opportunity of showing this map to the citizens, as this is one of the methods of making the city plan effective. It makes plain the practical side of city planning, and also shows that the comprehensive plan and report of Johnstown does not mean "tying pink ribbons on lamp posts." In Johnstown, as in other cities, a great many people have the idea that city planning means the spending of millions of dollars to create a "City Beautiful." This method of illustrating helps to offset such ideas to a great extent.

The Taxpayers Have to Be "Shown"

It has been found that the taxpayers are always willing to pay the bill provided that they can see what they are getting for their money. The education of the taxpayer is the solution of the whole problem of making the city plan effective. A great many of the proposed improvements in Johnstown, as well as in other cities, will have to be paid for out of funds realized from the sale of bonds. In order to do this in Pennsylvania cities, it is necessary, after a certain percentage of bonded indebtedness has been reached, to get the consent of the electors to increase the bonded indebtedness. By keeping the city plan continually before the electors and showing them the practical side of it, a planning commission makes them thoroughly acquainted with it, and when they are asked to vote in favor of a bond issue to pay for some improvement recommended in the city plan, there is no argument. It must also be remembered that the taxpayers and citizens of our cities are the ones that elect our officials, and, if familiar with the provisions of the comprehensive plan, will support candidates for city and county offices who are pledged to carry out the city plan.

It is always a question of "Why?" with the taxpayer. In order to show the taxpayer why, Johnstown has a complete set of lantern slides of all the pictures and maps in the comprehensive plan and survey. With these the Commission goes before any club, Sunday school, lodge, social organization, parent-teachers' association, and any other gathering of people who desire to hear about the proposed improvements. This lecture on the comprehensive plan can be had upon application to the Commission, without cost or expense to the organization or gathering. The lectures help to get a great deal of public sentiment back of the plan.

Intelligent Use of Local Newspapers

The newspapers are also a great factor in making the city plan effective. The Johnstown newspapers are to be very highly commended for the splendid manner in which they cooperate with with the Planning Commission in giving its recommendations unlimited space and in often commenting editorially upon the recommendations. In giving newspaper publicity to a comprehensive plan, however, great care must be taken in writing the articles and in making statements of the probable cost of the proposed improvement. The best method is to "make haste slowly." It is very easy to scare the citizens of smaller cities regarding the carrying out of the provisions of the comprehensive plan, especially if they see headlines like this: "$10,000,000 Will Complete City Plan." When an approximate estimate of the cost of any improvement is published in a newspaper, the article should also, if possible, carry with it an approximate estimate of the increased valuation that will result from the proposed improvement. This will show that city planning is really a paying investment. If cities would estimate the increased values of the surrounding properties that are derived by making improvements, there would be little or no trouble in actually carrying out a large number of the proposed improvements within a comparatively short time.

The Schools the Most Effective Ally

All of the foregoing will help to make the city plan effective, but the very best method is the use of the schools. A city planning commission can with a little assistance or cooperation on the part of the school authorities obtain wonderful results. In Johnstown the Commission has been very successful with the plan in the schools. In

STREET OBSTRUCTIONS

1. Actual space between obstructions. 2. Legal width of sidewalk, 13 feet. 3. Cellar entrances, projecting steps. 4. Crates, etc.

the fall of 1920 it was suggested to the superintendent of grammar grade schools that the comprehensive plan be used in the schools in some way so that the pupils as well as the city would get the benefit. As a result the comprehensive plan and survey was adopted by the teachers of the eighth grades as the subject for the study of the English language under the title of "Future Johnstown." This was done in the following manner:

First of all, the Commission held a meeting with the teachers and lectured to them, showing them the various slides. The plan was then divided into six parts as follows:

Commission, jurisdiction, duties and object
The plan as a whole
Thoroughfares
Rivers and bridges
Parks and playgrounds
Municipal buildings

One subject was assigned to each of the six grammar grade schools. Next, the Commission took the slides into the schools and lectured to the children. Each slide was shown and briefly explained. The children were allowed to ask questions, in order to make sure that the pupils understood the proposed improvement thoroughly. Then the children were taken to the sites of the proposed improvements. Every child was required to make an oral report and later a written report of the improvement. The pupils thus were learning how to use English correctly and at the same time learning the needs of their city. The children wrote original stories about the proposed improvements, as no printed matter was given them. The object of this method was to get the children to ask questions, and this is where the valuable part of the school work came in. Mother, father, sister, brother, relatives and friends were interviewed on these subjects by the little folks. Usually, the adult was not familiar with the plan and gave the child some excuse or put off answering its questions until such time as he could come to the City Hall and find out about the improvement upon which the student desired information. In this way the large map was again used to make friends for the plan.

As the work in the school progressed, speakers were developed, and one of the pupils was selected from each class as its speaker on "Future Johnstown," at the commencement exercises. On the evening of the commencement exercises these pupils gave an illustrated lecture on the needs of

their city. The children lectured to approximately 1,600 people on that evening, and there is no doubt that they created public sentiment in favor of the plan, as many of those who attended had never seen the slides or had any idea of what was proposed by the City Planning Commission. This was probably the first time in the history of American schools that children of the eighth grades gave illustrated lectures.

Can you imagine what the result will be if the schools in Johnstown turn out 250 or 300 children every six months who are thoroughly educated on the recommendations contained in the city plan? Also remember that these children, while they are studying the needs of the city, are getting adults interested in the plan.

The credit for the success in the schools belongs first of all to the children, and then to the teachers, for the splendid manner in which they did this work.

Acknowledgment.—From a paper read before the American Civic Association, at Chicago, November 14, 1921.

The Municipal Engineer's Part in City Planning

During the past quarter of a century the evolution of cities and the revelation of the disastrous results that have sprung from the lack of intelligent control and coordination of the elements of urban growth, have brought forward a new constructive activity, namely, city planning. Although this new activity calls to its service the skill and genius of all the professions, arts and sciences which can contribute to city building, its ultimate success, like the ultimate success of any great forward step in constructive progress, depends on the cooperation of the engineer, and particularly of the municipal engineer, with his knowledge of the present and future needs of the city. Through his daily contact with its problems, he knows what standards of public works and service are necessary for the welfare of the people.

Fundamentally, city planning has to do with the laying of the foundation of the city, on the stability of which the usefulness of the structure raised depends. The failure of the city structure based on a small-town foundation to carry the service load of the modern city has been the real driving force behind the city-planning movement of the past twenty-five years.

The street system is the basis of every city plan and is the controlling element in determining the efficiency and economy of public works; its great importance lies in the fact that it provides channels for traffic, facilitates the subdivision and use of land, and creates opportunities for the expression of civic art. It is the most difficult and costly part of the city's structure to change after it has been fully improved.

Most of the cities of America began their existence with an orderly layout of streets over an area of such extent as the founder or founders considered necessary for the enterprise they had in mind; when the growth reached the limits of this orderly layout, it was almost invariably extended into new areas without any regard for order, system or topography. Cities have usually grown by building up land subdivision after land subdivision on private initiative, each independent of all the others, with streets considered only in their effect on the salability of lots and without regard for their traffic value.

Until within a comparatively recent period it was customary in the initial layout of a town site to establish a severely rectangular system of streets regardless of topography and to adopt arbitrary and uniform standards for street widths and block dimensions. This custom has imposed on cities which have grown to any considerable size, very complex and costly problems of replanning and reconstruction, which the municipal engineer is called on to solve. Transportation and drainage—both engineering problems of the greatest importance in economic city development—were virtually overlooked, to become later the subjects of controversy and large expenditures. Much of this could have been avoided by the exercise of engineering skill and foresight in laying out the streets in such a manner as to permit of transportation lines and drainage channels being constructed along direct lines of least resistance.

"Municipal Engineering," George S. Webster. Trans, Am. Soc. C. E., 1821, page 516.

Another Undesirable European Comes to America

The Shade Tree Pest Problem

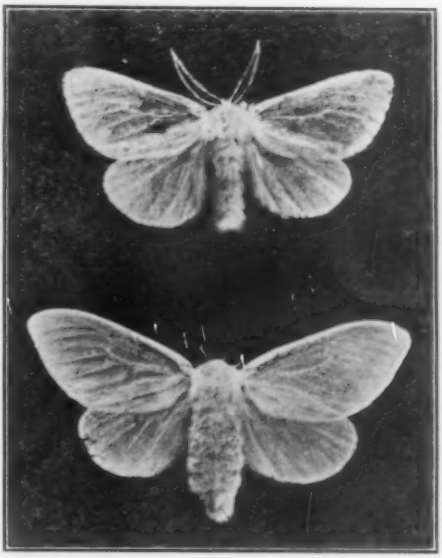
By W. Dwight Pierce, Ph. D.

ONE of the late circulars of the Bureau of Entomology should most certainly shake our American complacency with regard to the efficiency of the barriers we have put up against undesirable immigration. Another unwanted foreigner has got by the authorities.

This undesirable is of a nationality not often mentioned in diplomatic correspondence and no doubt would get through Ellis Island without an inspector's noticing him, but he is nevertheless well known in Europe, where he is just as little thought of and just as undesirable as in our midst. But in this case it was not Ellis Island that was on guard against him, but rather the Federal horticultural inspectors at the ports of entry, and the various state entomologists.

How he got by we do not know, but perhaps it is because we haven't yet sufficiently recognized the importance of an adequate inspection service by the Federal Horticultural Board. This foreigner in our midst is by name *Stilpnotia Salicis Linnaeus*, nicknamed Satin Moth, by trade a defoliator of willows and poplars, of the race or order of beings known to the scientists as *Lepidoptera*, and to the ordinary man of the street as moths.

In the very heart of the country where the gipsy moth and brown tail moth—also European immigrants of a few decades ago—have for years been devastating our shade and forest trees, this new pest, which in Europe attacks poplars, willows and cottonwoods, has made its entry and become thoroughly established in the past few years. If it was noticed at all, it was taken for one of the old familiar pests, and nobody reported it. Only last year some more observant person sent in some specimens, and then it was found that the houses were being overrun with caterpillars, and that instead of being newly established in just one small spot, it had already spread over 642 square miles of territory in 60 towns of eastern Massachusetts and four towns in New Hampshire. It was also found at Vancouver, British Columbia, in 1920. In other words, this pest has invaded our continent from both sides at almost the same time.



THE SATIN MOTH: MALE ABOVE, FEMALE BELOW

The Bureau of Entomology has issued a circular and has some of its scouts out on the line; presumably the Federal Horticultural Board and the various Eastern States have issued quarantines; inspectors are watching for its spread, but the moths fly readily, often in swarms, and there is no known way of rapidly controlling the pest, once established. There are not so many entomologists and inspectors in the country but that this pest might become very widespread before reaching the attention of an entomologist, unless the people also have their eyes open. Had the people who now remember seeing it in 1918 and 1919 reported it, two years would have been gained in the control work.

If you see caterpillars stripping willows, poplars, aspens and cottonwoods, don't go by on the other side. Stop and obtain some specimens and mail them in a box, secure against breakage, to your state entomologist, or write and tell him what you have seen.

The satin moths have pure white wings, and their bodies are covered with long white hairs, so that the whole appearance is as of satin. The males are a little smaller than the females, and the body length varies from 15 to 20 millimeters in the male and 20 to 25 millimeters in the female, with the wing expanse varying from 35 to 55 millimeters. In other words, they are almost an inch long and the wings spread from one and a half to two inches in width.

The eggs are laid in conspicuous patches from one-half to one inch in length and are covered with a white secretion. A single female may lay as many as 550 eggs. Most of the egg-laying is done in the middle of July. In Europe these eggs may not hatch until the next spring, but in Massachusetts they were observed to hatch in hot weather in about 15 days.

The larvae have many tubercles bearing long hairs and are conspicuously marked with large whitish patches on the dorsum of the segments. The young larvae feed on the epidermis of the leaves, giving them a skeletonized appearance. When they reach about the third stage of development, they construct little silken hibernating pockets in the crevices of the bark, and here they remain dormant until the spring foliage comes out, when they appear and feed until fully developed in June or July. They seek shelter and construct cocoons on the trees or sides of houses. The pupal stage lasts about nine days. The first moths have been observed in New England about July 2, and from then on they become very abundant.

The new bulletin is entitled, "The Satin Moth: An Introduced Enemy of Poplars and Willows," by A. F. Burgess, U. S. Department of Agriculture, Department Circular 167, May, 1921, and can be obtained on application to the Bureau of Entomology, Washington, D. C. It was not primarily the purpose of this article to discuss the new pest, but rather to draw a lesson from its arrival and establishment.

The Menace of Foreign Pests

The whole record of American shade tree troubles proves to us that our trees are most endangered by the foreign importations. It seems to be a biological law that a pest escaped from its natural environment and its normal enemies, and transplanted into a favorable climate with the proper food, will become far more serious than in its native habitat.

We have but to mention again the gipsy moth, which came to America about thirty years ago, and the brown tail moth, which appeared a little later; these two species nearly devastated the trees of New England, and were fast advancing on New York when vigorous measures were taken to suppress them. We will cite the elm leaf beetle, the willow leaf beetle, the Japanese beetle, the horse chestnut borer, the San José scale, and many other scales, the pine shoot moth, the elm sawfly, the poplar borer, the poplar curculio, as prominent among the forest and shade tree pests that have come to our shores uninvited and taken possession of our priceless heritage.

In 1917 the writer edited for the Department of Agriculture a volume known as the "Manual of Dangerous Insects Likely to Be Imported." The purpose and intent of this volume was to call the attention of our American authorities to the numerous pests of Europe, Asia, Africa, Australia and South America which might in our great extending commerce reach our shores and become pests. The time is coming when our nation must have outposts in all lands whence come our imports, stationed there to observe the dangerous pests and warn our authorities, as well as guard our commerce by preventing the importation of dangerous products. Such action will have the wholesome effect of forcing importing nations to effect control of their pests in order to save their commerce.

The Need of Local Vigilance

This event must emphasize more than ever the need of national, state and municipal vigilance, if we are to save for future generations the trees we love so well. It will not do to rely on the meager Federal and state appropriations to keep pests from reaching our shores and spreading. Every city must have expert forces constantly engaged in watching and caring for its trees and shrubbery. They must be men who know what to guard against and what they must do in emergency.

Pest control is a highly developed science.

At present it involves a tremendous amount of technical training. No two pests can be controlled in exactly the same manner, and the entomologist must know the different methods available and exercise his judgment and past experience in meeting the tree problems under his jurisdiction.

The glory of every city is the mantle of green formed by its shade trees, those blessed companions of man, which give him shade and shelter and relieve his eye-strain caused by the glare of city streets. The trees are the most important agency in clarifying the atmosphere. They are the pride of the householder, the models of the artist, the inspirers of the poet. Such of our cities as have become congested and pushed their house lines on the sidewalks, long since found the absolute necessity of creating frequent breathing spaces, where green grass and beautiful trees could be grown, to give relief to the dweller in the closely packed sections.

POPLARS IN A MASSACHUSETTS TOWN, DENUDED BY THE SATIN MOTH

The parks are the resting-places of the populace. Residential sections with parkings of trees are the most highly prized by home owners, and, in fact, the presence of a beautiful tree on a property is a distinct asset from the real-estate standpoint.

If the citizens prize the trees so highly, why are our cities often so negligent of the health of their shade trees? When a member of our family is sick, we call in a specialist and expect him to cure the disease. For every trouble we consult men who know what to do, except when our trees are in danger; then we seem to pass the responsibility on to some one else, or shrug our shoulders, and say, "It is too bad"—but in many cities no action results. That is why these new pests get a strangle-hold on the nation. If the men of Watertown and Cambridge who observed the satin moth in 1918 and 1919 had truly done their duty, we should not have in New England a pest threatening the poplars and willows of America.

The control of your shade tree pests should be confided only to reputable technical men who can show by diploma or other credential that they are qualified as experts to handle these problems. Every different species of tree has its own distinct types of pests. All of the pests of a single tree cannot be handled by any one or two standard methods, nor can they all be reached at the same time of the year. Only certain pests can be reached by lime-sulphur sprays; some must be treated with nicotines, arsenicals, oils, etc.; some must be guarded against by banding; others work in the heart of the tree or branch and present extremely serious problems. Who but a technically trained man can be expected to know how to go about solving these problems and effecting control?

What Is a Fair Salary for a City Clerk?

THE following tables, prepared from a questionnaire sent out by THE AMERICAN CITY, cover a distribution of replies wide enough to give a fair idea of the current salaries of city clerks. It is difficult to compare the salaries of city clerks. Their duties differ considerably in various localities, making it necessary to be careful not to draw hasty conclusions from these figures.

Among the large cities reporting, Minneapolis, Minn., pays the highest salary—$4,500. Pittsburgh, Pa., which is larger than Minneapolis, pays but $3,600. There are considerable differences in the salaries paid in the cities of about 100,000 population: Lawrence, Mass., $2,800; Lowell, Mass., the same; Trenton, N. J., $2,400; Oklahoma City, Okla., $3,000; Erie, Pa., $2,500; Reading, Pa., $2,400; Scranton, Pa., $2,300; Nashville, Tenn., $3,000. Wide divergences appear in the 75,000 group. Sioux City, Ia., reports $175 a month, a rate of $2,100 a year; Wichita, Kans., $2,400; Holyoke, Mass., $3,000; St. Joseph, Mo., $1,800; Allentown, Pa., $2,000; Charleston, S. C., $2,400. In the 30-50,000 group are such figures as that of Stamford, Conn., $3,500, which compares favorably with the salary paid in much larger places; Decatur, Ill., $1,800 and fees; Gary, Ind., $3,000; Lewiston, Me., $1,800; Salem, Mass., $2,400; Bay City, Mich., $2,000; Jackson, Mich., $2,500; and Lansing, Mich., $2,400. It is interesting to note that Montclair, N. J., pays $3,900, while Orange, N. J., slightly larger, pays but $2,400, and Union, N. J., with a still smaller population, $4,000.

In the smaller cities and towns comparison is very difficult. In most villages, and in many places of considerable size, the city clerk is expected to devote only a portion of his time to the duties of that office. For instance, in Chillicothe, Ohio, the city clerk draws no salary as such, his office being combined with that of city auditor. In fact, combinations of offices are frequently met, although these are not indicated on the tables. A few of the typical ones may be noted, as they may suggest feasible combinations for other cities:

In Weiser, Idaho, the city clerk is also police judge. In Hymera, Ind., his office is combined with that of city treasurer; in Atlantic, Iowa, which pays $290 a month, he is also superintendent of utilities. In Tipton, Ia., he is weight master and collector. Combinations of the offices of city clerk and city auditor or city treasurer are common. In Westfield, Mass., the city clerk is also clerk of registrars; in Forsyth, Mont., city attorney; in West View, Pa., street commissioner and building inspector; in Orange, Texas, city treasurer, tax assessor and collector. City clerks act as city purchasing agents in many places, among which may be mentioned Tekoa, Wash., Aliquippa, Pa., Farrell, Pa. Two cities report that the city manager performs the duties of city clerk: Franklin, N. Y. (where he is also purchasing agent), and Blackstone, Va. In places of small size, where there are a number of duties no one of which requires full time, and yet where each requires considerable attention, such combinations work out very well and are to be recommended

A number of cities report that the city clerk is partly paid from fees or commissions of various sorts. Welsh, La., Bar Harbor, Maine, and Bath, Maine, report that the clerk is paid no regular salary, but receives fees only.

SALARIES OF CITY CLERKS

UNLESS OTHERWISE STATED, FIGURES REPRESENT YEARLY SALARY

State and City	Population	Over 10,000	Under 10,000
ALABAMA			
Albany	7,652		$ 180 m*
Brewton	2,682		45 f**
ARIZONA			
Bisbee	9,205		200 m
Globe	7,044		200 m
Mesa	3,036		250 m
Miami	6,689		105 m
Prescott	4,300		225 m
Tucson	20,292	$2,400	
CALIFORNIA			
Grass Valley	4,006		1,320
Huntington P'k	4,513		150
Sawtelle			50
COLORADO			
Durango	4,116		2,100
Greeley	10,833	125 m	
Monte Vista	2,367		400
Montrose	3,581		110
Paonia			100 m

* m—per month.
** f—plus fees.

State and City	Population	Over 10,000	Under 10,000
Pueblo	42,908	2,280	
Rocky Ford	3,746		300
Salida	4,689		125 m
Trinidad	10,906	150 m	
CONNECTICUT			
Stamford	35,086	3,500	
Torrington	20,623	37.50 wk.	
FLORIDA			
Miami	29,549	150 m	
Miami Beach			225 m
GEORGIA			
Perry			60
Thomasville	8,196		135 m
Valdosta	10,783	150 m	
IDAHO			
Lewiston	6,574		160 m
Paris			400
Payette			1,200
Rexburg	3,569		1,800
Wallace	2,816		1,000
Weiser			145
ILLINOIS			
Abington	2,721		1,200
Arlington H'ts			125
Carbondale	6,267		100 m
Clinton	5,898		600
Decatur	43,818	1,800 f	
Eureka			200
Golconda			50 f
Harvard	3,294		25 m
La Grange			70 m
La Grange P'k			250
Mascoutah	2,343		300
Mound City	2,756		100 mf
Oregon	2,227		1,500
Princeton	4,126		165 m
Zion	5,580		900
INDIANA			
Covington			450
Crown Point	3,232		500
Frankfort	11,585	1,000	
Gary	56,375	3,000	
Hymera			180
Mishawaka	15,195	1,700	
Mt. Vernon	5,284		850
Salem	2,836		200
Tell City	4,086		250
Winchester	4,021		700
IOWA			
Afton			100 f
Atlantic	5,329		290 m
Belle Plaine	3,887		115 m
Chariton	5,175		90 m
Cherokee	5,824		900
Clear Lake	2,804		20 m
Elkader			100
Fort Madison	12,066	1,800	
Glenwood	3,862		300
Guthrie Center			35 m
Hawarden	2,491		175 m
Humboldt			200
Manchester	3,111		130 m
Muscatine	16,068	1,500	
Oelwein	7,455		70 m
Osceola	2,684		400
Perry	5,642		100 m
Rock Rapids	2,172		150
Sheldon	3,488		150 m
Shenandoah	5,255		125 m
Sidney			50
Sioux City	71,227	175 m	
Spirit Lake			600
Tama	2,601		175
Tipton	2,142		135 m
KANSAS			
Anthony	2,740		150
Baldwin City			70 m
Cherryvale	4,698		110 m
Coffeyville	13,452	135 m	
Conway Springs			60
Dodge City	5,061		1,800

State and City	Population	Over 10,000	Under 10,000
Douglass			50 m
Ellis			600
Fort Scott	10,693	125 m	
Fredonia	3,954		100 m
Harper			75 m
Hays	3,165		140 m
Hillsboro			35 m
Hoisington	2,395		75 m
Horton	4,009		100 m
Hutchinson	23,298	1,800	
Kinsley			60 m
Lebanon			65
Marion			85
Marysville	3,048		75 m
Olathe	3,268		100 m
Ottawa	9,018		1,500
Parsons	16,028	1,800	
Peabody	2,455		50 m
Pittsburg	18,052	1,800	
Protection			37.50 m
Stafford			150 m
Troy			420
Weir	1,945		300
Wellington	7,048		125 m
Wichita	72,217	2,400	
Wilson			25 m
KENTUCKY			
Cynthiana	3,857		95 m
Hickman	2,633		150
Somerset	4,672		300
LOUISIANA			
Colfax			75
Donaldsonville	3,745		40 m
Thibodaux	3,526		120
Vivian			15 m
Welsh			fees only
MAINE			
Bar Harbor	3,622		fees only
Bath	14,731	fees only	
Brewer	6,064		520 f
Lewiston	31,707	1,800	
MARYLAND			
Chestertown	2,537		420
Easton	3,442		1,500
Port Deposit			50
Westernport	2,977		300
MASSACHUSETTS			
Attleboro	19,731	1,800	
Blackstone	4,836		75 f
Dracut	5,280		200
Gloucester	22,947	1,500	
Holbrook	3,161		200
Holyoke	60,203	3,000	
Lawrence	94,270	2,800	
Lowell	112,759	2,800	
Ludlow	7,470		600
Montague	7,675		400 f
Marblehead	7,324		about 800
Melrose	18,204	1,800	
Millbury	5,652		200
Northbridge	10,074	35 m	
Pepperell	2,468		200
Salem	42,515	2,400	
Sutton	2,578		100 f
Taunton	37,137	2,500	
Uxbridge	5,384		800
Westfield	18,603	2,000	
Weymouth	15,057	250 f	
Williamstown	3,707		300
Winchester	10,391	812.50	
Winthrop	15,446	520 f	
MICHIGAN			
Allegan	3,637		150 m
Alma	7,542		3,000
Bay City	47,554	2,000	
Bessemer	5,482		1,800
Big Rapids	4,558		1,200
Blissfield			100
Cadillac	9,734		2,000
East Jordan	2,428		35 m
Hancock	7,527		135 m
Harbor Beach			1,500
Holland	12,166	2,600	

State and City	Population	Over 10,000	Under 10,000
Iron Mountain	8,251		150 m
Ishpeming	10,500	1,000	
Jackson	48,374	2,500	
Jonesville			300
Lansing	57,327	2,400	
Ludington	8,810		1,800
Marine City	3,731		1,200
Marquette	12,718	125 m	
Menominee	8,907		1,640.16
Niles	7,311		1,800
Royal Oak			2,400
St. Clair	3,204		1,200
Sparta			10 m
Wyandotte	13,851	2,400	
MINNESOTA			
Bertha			35
Jackson	2,144		40 m
Le Sueur			37.50 m
Minneapolis	380,582	4,500	
Renville			180
St. Charles			100
MISSISSIPPI			
Amory	2,861		125 m
Pontotoc			45 m
Tupelo	5,065		85 m
MISSOURI			
Butler	2,702		fees only
Carthage	10,068	125 m	
Charleston	3,410		300 f
Columbia	10,379	100 m	
Farmington	2,886		fees only
Greenfield			200
Harrisonville	2,073		150
Higginsville	2,724		35 m
Joplin	29,902	150 m	
Monroe City			75
Poplar Bluff	8,042		1,200 f
St. Joseph	77,939	1,800	
Sarcoxie			2.50 m
Sedalia	21,144	1,800	
Sikeston	3,797		70 m
Slater	3,797		400
MONTANA			
Big Timber			50 m
Forsyth			500
Glasgow	2,059		125 m
Glendive	3,816		75 m
Great Falls	24,121	200 m	
Havre	5,429		50 m
Red Lodge	4,515		60 m
Kalispell	5,147		1,500
Livingston	6,326		175 m
Miles City	7,937		2,000
Roundup	2,409		300
Whitefish	2,867		1,200
NEBRASKA			
Bloomfield			300
Clay Center			50 m
College View	2,249		110
Crawford			300
Grand Island	13,960	1,200	
Hebron			150
Loup City			200
McCook	4,303		300
Norfolk	8,634		100 m
Osceola			300
Ralston			150
Stromsburg			100
Wahoo	2,338		250
Wayne	2,115		300
Wilber			300
NEVADA			
Reno	12,016	175 m	
Sparks	3,238		60 m
NEW HAMPSHIRE			
Berlin	16,104	1,400 f	
Concord	22,167	1,400	
Franklin	6,318		1,500
Milford	3,783		200
NEW JERSEY			
Asbury Park	12,400	1,500	
Belvidere			200
Cape May City	2,999		1,000
Edgewater	3,530		1,500
Englewood	11,627	1,200	
Frenchtown			150
Jamesburg	2,671		150 f
Long Branch	13,521	1,500	
Madison	5,523		3,100
Milltown			400 f
Montclair	28,810	3,900	
Orange	33,239	2,400	
Plainfield	27,700	3,000	
Princeton	5,917		900
Roselle Park	5,438		500
Salem	7,435		500
Summit	10,174	1,000	
Trenton	111,289	2,400	
Union	20,651	4,000	
Westfield	9,026		1,000
Wildwood			840 f
NEW MEXICO			
Albuquerque	15,157	125 m	
Deming	3,212		300 f
NEW YORK			
Adams			250
Auburn	36,192	2,700	
Babylon	2,523		350
Brewster			125
Canton	2,631		150
Catskill	4,728		600
Cazenovia			600
Champlain			100
Clinton			150
Clyde	2,528		100 f
Cuba			480
East Aurora	3,703		500
Floral Park			400
Glens Falls	16,638	1,100	
Groton	2,235		1,200
Haverstraw	5,226		400
Hempstead	6,382		2,200
Homer	2,356		150
Hudson	11,745	1,500	
Jamestown	38,917	1,900	
Kenmore	3,160		40 m
Newark	6,964		40 m
Newburgh	30,272	2,500	
New Paltz			125
Niagara Falls	50,760	3,300	
Norwich	8,269		300
Ogdensburg	14,609	1,800	
Olean	20,506	2,100	
Phelps			175
Philmont			75
Port Chester	16,572	1,500	
Poughkeepsie	35,000	2,500	
Salamanca	9,276		1,700
Saratoga Springs	13,181	500	
Scotia	4,358		1,600
Sherburne			600
Sherrill			125
Sidney	2,670		240
Walton	5,425		300
Waterloo	3,809		200
Watertown	31,285	1,650	
NORTH CAROLINA			
Asheville	28,504	3,000	
Canton			60 m
Edenton	2,777		1,400
Gastonia	12,871	2,100	
Hickory	5,076		3,000
King's Mt.	2,800		100 m
Raleigh	28,674	2,600	
Reidsville	5,333		150 m
Salisbury	13,884	1,800	
Waynesville	1,943		250
NORTH DAKOTA			
Casselton			360
Enderlin			200
Hillsboro			35
Jamestown	6,627		1,800
Landon	1,223		250
Lidgerwood			200
Lisbon			40 m
Oakes			50 m
Wahpeton	3,069		600

State and City	Population	Over 10,000	Under 10,000
OHIO			
Arcanum			250
Barnesville	4,865		300
Bellefontaine	9,336		1,500
Bowling Green	5,788		1,490
Brookville			200
Cheviot			900
Chillicothe	15,831		none†
Cleves			150 m
Delaware	8,756		1,700
Elyria	20,474	1,500	
Granville			200
Huron			175
Kenmore	12,683	1,800	
Kent	7,070		1,800
Lebanon	3,396		900
M'Connellsville			30 m
Mansfield	27,824	2,400	
Mt. Gilead			30 m
Ottawa			260
Painesville	7,272		none
Sandusky	22,897	960	
Vermillion			360
OKLAHOMA			
Anadarko	3,116		1,200
Blackwell	7,174		2,400
Boley			20 m
Broken Arrow	2,086		75 m
Edmond	2,452		100 m
Lawton	8,930		1,800
Madill	2,717		125 m
McAlester	12,095	2,100	
Muskogee	30,277	2,500	
Oklahoma City	91,258	3,000	
Poteau	2,679		25 m
Sapulpa	11,634	2,100	
Stigler			125 m
Stillwater	4,701		1,800
Tahlequah	2,271		40 m
OREGON			
Eugene	10,593	140 m	
Grant's Pass	3,151		1,020
Klamath Falls	4,801		175 m
La Grande	6,913		135 m
Pendleton	7,387		125 m
Seaside			1,700
Tillamook			150 m
Woodburn			100 m
PENNSYLVANIA			
Aliquippa			65 m
Allentown	73,502	2,000	
Bangor			370
Berwick	12,181	500	
Bradford	15,525	2,500	
Bridgeville			250
Bristol	10,273	400	
California	2,480		300
Cambridge Springs			360
Catawissa			460
Chambersburg	13,171	1,800	
East Bangor			175
East Stroudsburg	4,855		60 m
Ebensburg			120
Ellwood City	8,958		170 m
Emaus	4,370		25 m
Erie	93,372	2,500	
Farrell			140 m
Franklin	9,970		2,000
Greenville	8,101		1,560
Harrisburg	75,917	2,100	
Hawley			50
Indiana	7,043		400
Ingram	2,900		300
Johnsonburg	5,400		35 m
Kennett Sq.	2,398		150
Landsdowne	4,797		600
Lititz	3,680		120
McDonald	2,751		400
McKeesport	45,975	1,800	
McSherrystown			35
Malvern			150
Meadville	15,563	2,000	
Mifflinburg			1,500
Montrose			75
Narbuth	3,704		100
Northampton	9,349		20 m
Oakmont	4,512		400
Perkasie	3,150		300
Pitcairn	5,738		1,800
Pittsburgh	588,193	3,600	
Reading	107,784	2,400	
Sayre	8,078		500
Scranton	137,783	2,300	
Shenandoah	24,726	1,100	
Spangler	3,035		125
Susquehanna	3,764		300
Swoyersville	6,876		360
Uniontown	15,609	1,980	
Washington	21,480	2,200	
West View			180 m
Wrightsville	1,943		75
Youngsville			20 m
RHODE ISLAND			
Pawtucket	64,248	3,750	
Warren	7,841		750 f
SOUTH CAROLINA			
Bamberg	2,210		80 m
Barnwell			900
Bennettsville	3,197		151.67 m
Branchville			300
Charleston	67,957	2,400	
Darlington	4,669		1,800
Greenwood	8,703		1,680
Orangeburg	7,290		190 m
Valhalla	2,088		25 m
SOUTH DAKOTA			
Aberdeen	14,537		165 m
Canton	2,225		300
Clark			1,500
Elk Point			200
Flandreau			300
Highmore			450
Huron	8,302		2,400
Mitchell	8,478		2,100
Platte			150
Watertown	9,400		1,890
TENNESSEE			
Bristol	8,047		1,800
Dyersburg	6,444		2,000
Harriman	4,019		1,200
Nashville	118,340	3,000	
TEXAS			
Beaumont	40,422	3,000	
Brady	2,197		110 m
Brownsville	11,791	160 m	
Bryan	6,307		175 m
Corsicana	11,356	125 m	
Crockett	3,061		50 m
Del Rio	10,589	125 m	
Denison	17,065	175 m	
Flatonia			20 m
Galveston	44,255	2,400	
Karnes City			25 m
Longview	5,713		185 m
Marshall	14,271	175 m	
Memphis	2,839		360
Mineral Wells	7,890		1,500
New Braunfels	3,950		2,000
Orange	9,212		225 m
Paris	14,040	200 m	
Pilot Point			7.50 m
San Maria	4,527		900
Seymour	2,121		fees only
Terrell	8,349		125 m
Texarkana	11,480	150 m	
Tyler	12,085	190 m	
Vernon	5,142		2,400
Weatherford	6,203		600
Yoakum	6,184		1,500
UTAH			
Cedar City	2,462		400
Logan	9,439		175 m
Parowan			125
VERMONT			
Hardwick	1,550		1,100
Lyndonville	3,558		25 m
Montpelier	7,125		2,000

† Office of city clerk combined with that of city auditor.

State and City	Population	Over 10,000	Under 10,000
Newport	4,976		2,100
Northfield	3,096		100
Springfield	5,283		800
Virginia			
Bristol	6,729		150 m
Chase City			none
Cape Charles			300
Chatham			60
Covington	5,623		1,500
Falls Church			10 m
Newport News	35,596	3,000	
Norton			10 mf
Suffolk	9,123		1,100
West Point			12
Washington			
Bremerton	8,918		150 m
Davenport			900
Everett	27,644	175 m	
Garfield			25 m
Pullman	2,440		100 m
Puyallup	6,271		45 m
Ritzville			900
Tekoa			40 m
Wenatchee	6,324		200
West Virginia			
Clarksburg	27,869	2,400	
Elkins	6,788		1,400
Martinsburg	12,515	1,500	
Moundsville	10,669	1,500	
Wheeling	54,322	3,000	
Wisconsin			
Alma			200
Bloomer			200
Chilton			600
Clintonville	3,275		900
Madison	38,278	2,400	
Manitowoc	17,563	2,700	
Nekoosa			250
Park Falls	2,676		60 m
Phillips			600
Sheboygan	30,955	1,500	

The Smoke Problem in Cities

The Elimination of Smoke a Municipal Problem in Which Federal Help is Assured

MUNICIPAL authorities or organizations in New Orleans, Kansas City, Salt Lake City, Akron and Springfield, Ohio, and many other large cities are taking active steps in fighting the smoke evil. Smoke is the unsightly and offensive resultant of improper combustion and is damaging to both health and property. The prevention of objectionable smoke in the manufacturing and business centers of large cities is a problem that cannot be easily solved, and at present no city which uses a considerable quantity of bituminous coal is free from smoke. The cities of the East, however, have avoided this problem by a general use of the smaller sizes of anthracite coal. For this reason it is not surprising that the greatest improvement in the methods of burning bituminous coal has been made in the Central and Western States.

The smoke problem is nearly as old as civilization itself, for coal was being mined in Great Britain about the tenth century. In 1306, Edward I issued a proclamation prohibiting the burning of coal in the city of London, because of the "sulferous smoke and savour of the firing." In 1648 the people of London petitioned Parliament to prevent the importation of coal into the city. Beginning about 1750, when steam was applied to industrial purposes, coal began to be used more extensively, and consequently smoke became more abundant. In 1819, the government appointed a House of Commons' committee to inquire into the matter, and another committee was appointed in 1843. Two reports were issued in 1843 and 1845, but no legislation resulted. Other investigations were made in 1846, 1854 and 1866, and finally in 1875 the Public Health Act was passed, dealing with the question of smoke.

In the United States the problem, of course, did not appear so early, but as cities of considerable size developed here, the problem was also felt. It has been the subject of discussions, finally becoming of such importance that extensive investigations were made in Pittsburgh, Chicago and Salt Lake City by the U. S. Bureau of Mines. The Salt Lake City investigation was described in some detail in the July, 1920, issue of THE AMERICAN CITY.

Smokeless combustion requires the maintenance of a uniform and proper supply of fuel and air under conditions of suitable temperature, mixing, and volume of combustion space. The one word "uniformity" embraces most of the ideals for smokeless combustion. There are available for powerplants, both municipal and private, a variety of designs of mechanical stokers that, when properly operated, will result in smokeless combustion. When improperly operated, however, the mechanical stoker will produce smoke just as abundantly as improper handfiring. In some parts of the United States where the coal mostly in use is one that easily produces smoke, the smoke from household fires becomes a nuisance. Salt Lake City is an example of such a place.

Saving Roads From Impact

The Importance of Surface Finish and Methods of Maintaining It

By H. Eltinge Breed
Consulting Engineer, New York City

IN an economically designed concrete road, the life of the pavement depends as much upon the surface finish as upon any other factor. We know that impact is the great cause of destruction of our pavements. As a smooth cylinder is rolled along a smooth table there is practically no impact, but if there are ridges in the table, and the cylinder bumps along over them, there will be such a series of impacts that, if the cylinder be heavy enough and be rolled often enough, the surface will be worn out and the table damaged.

That is analogous to what is happening to our roads. If the wheels of the vehicles are smooth and the pavement surfaces smooth, there is no damaging impact from traffic. The road lasts, even though it be weak in proportion to the volume and weight of traffic it must carry. If surface irregularities develop, the whole pavement, no matter how strongly built, soon shows the effects of wear. Our roads are built usually to withstand a pressure of 800 pounds per lineal inch of tire, yet if a ¼-inch obstruction occurs in the surface, the impact of one rear wheel of a 5-ton truck may exert an impact presssure of 20,000 pounds upon the road. Under such pressure the unevenness becomes a depression, whose edges spall and break, causing further impact and more depressions until the pavement is badly damaged.

Causes of Uneven Pavement Surfaces

There are five general causes of uneven surfaces in pavements:

1. Foreign materials in the aggregate, which, failing to amalgamate, are thrown out, leaving holes and depressions.
2. Non-uniform aggregates, which cause inequalities in wearing resistance to traffic, and subsequent depressions in the weaker places.
3. Poor workmanship in striking off and finishing concrete pavements.
4. Cracks, longitudinal and transverse, due to frost action, changes of temperature, or unequal bearing in the subsoil.
5. Uneven joints, perhaps the most common cause of surface troubles, due often to the piling up of joint material or to a difference in elevation of slab surfaces.

Three Maintenance Methods

Three general methods of preserving good surface finish, once it is obtained, are the use of steel reinforcements, the division of the road longitudinally, and the wider spacing of joints with the use of dowels.

The chief advantage of steel reinforcing is that it gives the road greater bearing power and greater resistance to frost action. It also offsets irregularities and weaknesses in subsoil. By helping to preserve the integrity of the pavement, it minimizes any tendency towards cracking, which is, of course, a cause of surface unevenness.

The division of the road longitudinally increases its beam strength about four-fold. Observation has shown that longitudinal cracks are not found in slabs 9 or 10 feet wide, although they are encountered in practically all slabs beyond that width. The reason for this difference is still a matter of conjecture, but until it is ascertained, highway engineers should be guided by results hitherto obtained and build their concrete roads in two longitudinal sections.

Since transverse joints are a prolific source of trouble, it is well to diminish their number as far as possible through the use of longer slabs. This wider spacing of joints becomes feasible through the use of steel reinforcement to meet the temperature stresses of the slab. The use of dowels gives stability to the joints and holds the surfaces even. The submergence of joints an inch below the surface has proved unsatisfactory. This method was devised at first to secure a smooth surface and to permit the use of a finishing machine, and it seemed admirable until subsequent expansion crowded and crushed the concrete above the joint material, leaving a badly ravelled and spalled joint. The best method of making the joint is to submerge the joint material until after the screed or finishing machine has passed over it, then to lift the

joint material slightly above the surface with long-fingered tongs, following this by finishing the joint with a split float or split roller, rounding the concrete next to the joint material with an edging tool.

Specific application of these general principles is found in the requirements for the special concrete highways in Delaware, Pennsylvania and New York. The specifications exact good workmanship by allowing a maximum of only ¼-inch depression in 10 feet of pavement tested with a straight edge. The use of a straight edge on green concrete indicates depressions to be rectified, and insures good results. These states specify materials with such precision as almost certainly to preclude the use of non-uniform aggregate or of foreign materials in the aggregate. The roads are designed so as to minimize the danger of movement in the slab, and the resulting cracks. Special attention is given to the placing of joints and to the suitability of the machinery in use.

All these precautions were taken on concrete roads built last summer in old Bennington, Vt., by the Fred T. Ley Company, Springfield, Mass., and so far not the slightest indication of any surface unevenness has appeared. This tends to support the belief that it is possible, within necessary financial limits, to build roads that will be practically indestructible under the traffic permitted by law.

Proper Method of Finishing

The actual method of finishing is, of course, important in securing a smooth surface. Some road builders prefer to use the finishing machine with the roller and belt. It is essential that the roller be light. A too-heavy roller pushes the crown out of the pavement and spoils the surface. Most specifications call for a weight of from 12 to 15 pounds per foot length. Some builders omit the roller, using only the machine. I believe that the roller helps. One advantage of the finishing machine is that dryer concrete can be used with it, which gives greater strength to the pavement. It gives also more uniform results than can be obtained with a green gang, and seems in general more fool-proof than the hand method. Still, many engineers and contractors prefer to strike-off with the hand screed, using the roller and belt. This has the advantage of eliminating one piece of plant, and if a heavy screed is used in the hands of competent workmen it gives as smooth a finish to the surface as the finishing machine

With either method the board belt gives unquestionably the better finish. The bow belt, however, can give good results. Proper belting takes off not only the water, but also the clay, loam, laitance, etc., that tend to form scale on the surface.

Acknowledgment.—From a paper read before the convention of the American Road Builders' Association, Chicago, Ill., January, 1922.

A CONCRETE CROSSROADS WITH CLEAR VISTAS AND WIDE RADIUS CURVES TO REDUCE ACCIDENTS

Forward Steps in Municipal Affairs

Public Welfare Departments

Saving Money on Public Works

ST. PAUL, MINN.—This city has in operation a system of conducting its public works which has proved remarkably successful as a money-saver.

The Chief Engineer submits an estimate to the Contract Committee as to what the job should cost. Then bids are publicly asked for, received and tabulated. If the lowest bid is less than the estimate, the contract is usually awarded to the lowest bidder. If the bids are higher than the estimate, the work is done by Force Account. On all Force Account work done so far under the present administration, the costs have ranged under the lowest bid received.

St. Paul has a municipally owned asphalt plant, and 10 cents a square yard is charged against the job for depreciation of equipment. This is expended in the maintenance and up-keep of the asphalt plant.

The following table gives an idea of costs, when paving by Force Account:

PAVING BY FORCE ACCOUNT

KIND	Sq. Yds.	Cost
Sheet asphalt	16,952	$54,308
Asphalt concrete	11,544	50,957
Brick	15,918	74,490
Creosote blocks	14,103	78,833
Tarvia	13,240	23,288
Totals	71,757	$281,876

Miscellaneous works, such as sewer and water connections, and drainage to be done in connection with the paving, came to $81,544, giving a grand total of $363,420.

A comparison with similar work done by the city under contract is interesting:

PAVING BY CONTRACT

KIND	Sq. Yds.	Cost
Sheet asphalt	63,119	$162,597
Brick	35,400	191,196
Concrete reinforced	66,355	160,076
Creosote blocks	41,362	262,370
Totals	206,236	$776,239

On three jobs for which the city asked bids, and for which the final costs have now been compiled, the following figures furnish interesting comparisons:

Actual cost, exclusive of water and sewer connections	$42,037.79
Engineer's estimated cost	57,800.00
Contractor's bid price plus 2 per cent added for inspection as required by the city charter	57,810.54

This gives a total saving on the Engineer's estimate of $15,762.21, and on the contractor's bid of $15,772.75.

It will be noted that the contractor's bid calls for 2 per cent additional for inspection. This, of course, is not sufficient to cover the inspection cost. However, it is a charter provision that only 2 per cent can be added and the balance must be paid out of the Inspection Account of the Permanent Improvement Revolving Fund. The total saving to the city is therefore really greater than the figures given above.

The Force Account system has also made it possible for the city to get much keener competition from contractors, as it is known that they are obliged to bid not only against other contractors, but against the city as well.

H. C. WENZEL,
Commissioner of Public Works.

Finance Departments

"Your Tax Dollar"

DETROIT, MICH.—The accompanying chart was prepared to visualize for the citizens of Detroit the services they receive for their tax dollar. An informed citizen body is the strongest guarantee for good government.

It has been stated repeatedly in the pages of THE AMERICAN CITY that a municipal budget is a financial statement of the work program of the city—the activities to be undertaken, their cost, and how they are to

A GRAPHIC PRESENTATION OF THE DETROIT BUDGET

be financed. The actual preparation, consideration, and adoption of such a program, in accordance with accepted budget principles, are too seldom realized in our cities. Detroit's budget is an effective document, however, informative to the administrative departments, the legislative body, and the public.

The budget for the year ending June 30, 1922, is $65,339,634, for the following characters of expense:

Fixed charges	$ 7,229,326
Operation and maintenance	41,043,567
Public improvements	15,746,466
Deficits	1,320,275
Total	$65,339,634

The manner of financing the entire program is carefully estimated, as follows:

Taxation	$40,164,706
Bond issues	12,981,577
Miscellaneous income—	
Cash balances, sales of products and services by departments, primary school money, fines, licenses, permits, etc.	12,193,351
Total	$65,339,634

In general, the following points relative to Detroit's budget procedure should be noted:

1. The budget includes *all* activities of the city for the year (exclusive of public improvements previously authorized either by Council or by the people, local improvement work, and trust funds).
2. The need and opportunity for public service are considered first, and, when determined, the means are provided for financing these services.
3. The *activity* is the basis of the request. For example, for the police department the costs of street patrolling, traffic control, public safety work, harbor duty, detectives, etc., are separately estimated.
4. Requests for expenditure are coördinated with estimated income.
5. The departmental requests are prepared well in advance of the fiscal year, are reviewed in detail by the Mayor, submitted to the Council for their consideration and the final passage of an appropriation ordinance—all *before the beginning* of the fiscal period.
6. Requests for expenditure are classified by department, fund, character, activity, and object of purchase.
7. Transfers may be made, when necessary.

8. A contingent fund is provided for emergencies.
9. A system of appropriation accounting is maintained currently by the Controller, to assure that the budget plan as enacted is being observed.

C. E. RIGHTOR,
Detroit Bureau of Governmental Research.

Police Departments

Traffic Vigilantes in St. Louis

ST. LOUIS, MO.—The experience that St. Louis has had with the work of a Traffic Vigilante Committee has been more than satisfactory—it has been distinctly profitable from the standpoint of safety. The slogan of the Vigilantes of St. Louis is, "Make St. Louis the Safest City in the World to Live In."

The organization consists of about 325 Vigilantes, and the only publicly known one of them is the Chief Vigilante, who is the writer. This secrecy about our organization has been maintained for several reasons, the best of which is that there is a marked psychological advantage in holding out to the general public, particularly the motoring public, the thought that there are a great number of keen-eyed, determined men watching to see that the law is not violated, and watching at the time when the uniformed policeman is not around. It is a patent fact that a man will not drive past a street car when it is unloading passengers if there is a uniformed policeman at hand, but the same man would try to sneak by if he did not fear that the motor car behind him had in it one of those argus-eyed Vigilantes. If that Vigilante carried some visible mark of identification on his car or person, he would be as conspicuous to the law violator as a policeman would. We feel that it is the secrecy of the work that makes it most effective.

The plan of procedure is simple. If a Vigilante sees a traffic violation, he catches the license number of the offender. On one of the blank post-cards which he carries in his pocket he checks the particular offense committed (the post-card indicates about twenty), signs his Vigilante number, filling in the time and the place of the occurrence, and mails the card to the Chief of Police of St. Louis.

At the office of the Chief of Police, the Safety Council's Vigilante Division maintains a stenographer, a clever young lady who knows in most instances what to do. All these post-cards are turned over to her each morning and she sends out on each one a notice to the offender telling him what and where and when his offense was and instructing him to make a written explanation thereof to the Chief of Police. In case of a very flagrant or major offense, the offender is given peremptory orders to report in person to the Chief of Police to make explanation as to why he violated the law.

By this method we secure the good will of the Police Department because the report of our work is published each week in the *Police Journal*, which reaches every police officer, and it is felt that the Vigilantes are really auxiliary policemen who must be considered at all times and helped. The Board of Police Commissioners of the city is warmly and strongly in approval of our

A BRANCH POLICE STATION IN ST. LOUIS, MO.

work and renders every possible assistance, and the Chief of Police gives his heartiest support to us, and his hardest third degree to the offender who comes by invitation to see him.

The Vigilantes have been very active. There have been weeks when they have turned in as many as 2,000 reports of violations. That was when a special drive was on. The normal number of reports per week is 600. These cover practically every item of traffic law violations, including no lights and one light, but our best attention as Vigilantes is given to the major offenses, such as reckless driving, passing street cars when loading, passing corners at high speed, and others of a dangerous character.

The organization is very careful in the selection of members, for in the beginning a few mistakes were made. Appointments of very young men have not been satisfactory, because they used their badges to intimidate, to get out of trouble themselves, or to "play smart." The personnel now consists of men ranging from thirty to fifty years, all of them of excellent standing in the community, many being heads of large businesses. The bigger the man is in the business world, the more anxious he is to help make his city the safest in the world to live in.

The total experience up to this time with the Vigilantes as an important branch of Safety Council work has been highly satisfactory and we would not recede from it nor drop it. In addition to keeping down the number of street accidents and casualties, it is of marked advantage to the local Safety Council itself in frequently furnishing opportunities for good newspaper publicity which do not arise from the more prosaic safety work done in industrial plants or schools.

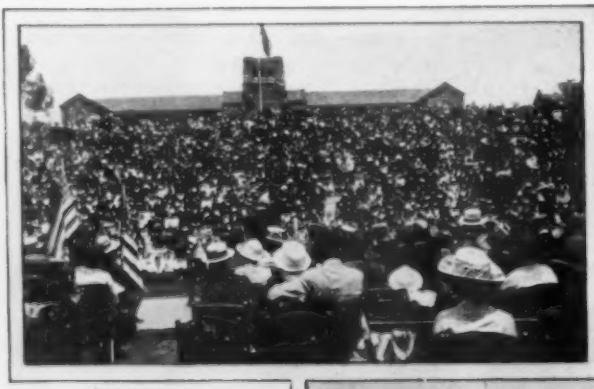
ROBERT E. LEE,
Chief Vigilante.

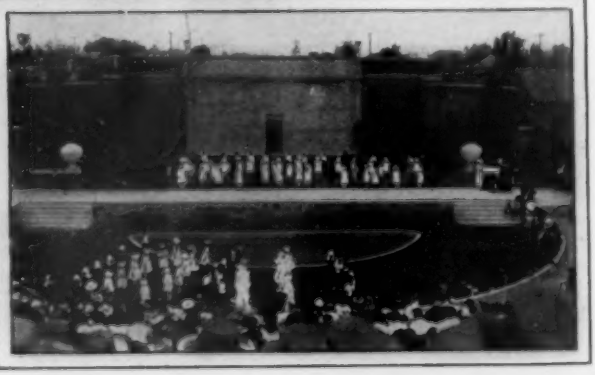
ACKNOWLEDGMENT.—From an address delivered before the Public Safety Section of the National Safety Council at the Tenth Annual Congress.

Departments of Education

An Open Air Theater on the High School Grounds

SANTA MONICA, CALIF. —Twelve years ago, when bonds were voted to build a new high school in Santa Monica, a few far-seeing persons planned that this should be erected on Prospect Hill, one of the most sightly locations for miles around, com-





TWO VIEWS OF THE OPEN AIR THEATER IN SANTA MONICA — THE UPPER LOOKING FROM THE STAGE, THE LOWER SHOWING THE STAGE. THE POOL ACTS AS A SOUNDING BOARD.

manding a magnificent view of ocean, plain and mountains.

They were criticised for building it off the beaten track, some distance from the principal residence section of the city, but they ignored criticism and went ahead. Today a splendid group of school buildings, a miniature college plant, ranking high in the United States for location, beauty of architecture, and equipment, crowns the hill which slopes gently toward the Pacific Ocean over an area of fourteen acres, all included in the High School grounds.

A part of the plan was the creation of an open air theater after the Greek style, but unique in following the architecture of the High School group. About two years ago bonds were voted by the people, and work was begun early last spring. This beautiful structure, which will seat 3,000 persons, has been completed at a cost of $30,000. It has been dedicated as a memorial to the boys from Santa Monica who perished in the World War, and is now known as the Santa Monica Memorial Open Air Theater, a monument of which the city may well be proud.

The theater is terraced out of the hill at the foot of the High School grounds, provided with concrete benches, and an ample turf stage, on which has been planted a full-grown sycamore tree brought from a near-by canyon. A sounding-board, in the shape of an oval pool of water just in front of the stage, enables the voices of speakers to be distinctly heard by those in the highest tier of seats.

This theater is rather distinctive, if not unique, in high school planning, and a noble example of the progressive policy of a board of education. In its use, the theater serves both the school and the communityat large.

HORACE M. REBOK,
Superintendent of Schools.

Fire Departments

It Pays to Advertise

Billings, Mont.—Nowadays, when one has something that he wants to bring to the attention of "the man in the street," he advertises. The American public has been educated up to the idea of noticing advertisements, signs and bulletins. By the same token, these notices must hold the attention, or they will get nothing more than a passing glance, and their message will soon be forgotten.

IF YOU LIVED IN BILLINGS, MONT., YOU WOULD STOP A MOMENT TO READ THIS BOARD

Business men advertise, showmen advertise, churches advertise—why not fire departments? More must be done than giving occasional talks to clubs and schools, holding formal fire drills, etc., if the nation-wide campaign for fire prevention is to continue to grow in effectiveness.

The idea of installing a bulletin board or display frame, like the one shown in the illustration, came to the undersigned as he was passing a motion-picture house. People of all walks of life pause to look at the poster of the movie hero or heroine. The experiment has shown that they will do the same before a striking display on the front of the fire station.

The display is changed periodically. To attract the first notice of passers-by, it usually contains one or two striking pictures of a fire. On coming closer, the citizen, his attention already aroused, reads the printed matter, which may be an account of the results of carelessness with fire, or the benefits derived from the use of some sort of fire-resisting building material, such as wired glass or metal sash. Statistics showing the annual or weekly fire loss are sometimes used, but sparingly, for it has been observed that the average reader "doesn't care for figures."

There is never any lack of material for display. All papers and periodicals coming to the Department are conned for articles. Pictures are often obtained from insurance interests. Such magazines as "Safeguarding America Against Fire" are clipped.

V. H. STEELE,
Chief of Fire Department.

ONE OF UTICA'S ATTRACTIVE PLAYGROUNDS

Recreation Departments

"Selling" Recreation to a Municipality

Utica, N. Y.—For the year 1921 the Board of Estimate and Apportionment of the city of Utica granted an appropriation of $20,000 for the Department of Recreation, a sum nearly double that which this department received the preceding year. In view of this appropriation, and also because the Department of Recreation as a separate department was not three years old, and consequently little known, the Recreation Commission realized the desirability of familiarizing the taxpayer with the activities of the department during the year.

In the attempt to make this appropriation go as far as possible in a city of 100,000, no provision was made for the publication of a report. In fact, owing to the prohibitive cost of printing, very few departmental reports were published by the city of Utica during 1921. The idea of printing a brief four-page folder largely of a statistical nature was borrowed from the Utica Council of Boy Scouts. The cost of printing these folders in quantity being less than $7 a thousand, it was comparatively inexpensive to circulate them far more widely than a complete report could have been distributed.

In this folder, under the head of "Community Activities," it is stated that 49,635 people attended 162 community gatherings in 4 centers, which were largely self-supporting.

"Playground Activities" are referred to as "A laboratory for putting into practice the precepts of parent and teacher." Here we are informed that 189,499 attended 12 playgrounds during July and August, and, in addition, 46,251 attended grounds open during May and June after 4 P. M. Omitting details, the main organized activities are enumerated: for example, 52 boys' baseball teams in 10 leagues, 13 girls' teams in 3 leagues, 39 volley-ball teams, 121 folk dances of 13 nationalities, 7 playgrounds with systems of self-government, 2,441 children in 61 story hours, etc.

Under "General Activities" it is stated that 29 organizations were aided in various ways in planning and carrying out field days, outings, social gatherings and diverse programs more or less recreational; 96 young men and young women were enrolled in a training course for recreational leadership conducted with the cooperation of various local agencies.

A brief statement of the aims, principles and methods of the Department of Recreation occupies the last page. In view of the appropriation previously mentioned, the following statement, appearing at the end of the tabulated statistics, is significant: "19 cents per capita was the total cost of maintaining the Utica Department of Recreation for the past year."

While the generous cooperation of all the local newspapers throughout the year and the space and endorsement given in the monthly bulletin of the Utica Chamber of Commerce are not to be underestimated, the Commission is convinced that the distribution of 10,000 copies of this folder has played a large part in "selling" recreation to the Utica taxpayer. Ample proof that Utica is "sold" on this proposition is seen in the increased appropriation just granted providing for 15 playgrounds and 8 community centers for the current year.

W. C. BATCHELOR,
Superintendent of Recreation.

Municipal Water Rates—Part II

A Thorough Analysis of Present Rates and Rate-Making

By E. E. Bankson, D. E. Davis and C. A. Finley*

GENERAL water service may first be separated into two groups, as public service and private service. It may be again divided according to flat rate service, and metered or measured service.

Flat Rate Service

The flat rate method of charging for water service is a heritage to us from pioneers in the water-works field, thereby carrying the approval of long custom, together with the approval of the wasteful user, because it winks at his extravagance at public expense. It seems to devolve wholly on the water-works men to gradually make obsolete the flat rate system. Flat rate charges or assessments are admittedly inequitable and conducive to wasteful habits, but being yet with us, they should always appear in excess of meter rate charges, for the same amount of service, with the hope that such a practice will create converts to the metered or measured service method.

The average domestic flat rate in the city of Pittsburgh is 55 per cent in excess of the meter rate for similar service, but every flat rate consumer has the option of transferring to measured service if he so desires. As against this high flat rate, there remain under flat rate service approximately two-thirds of the total number of consumers with no apparent desire to avail themselves of the economy offered; in fact, most of the metering accomplished has been of a compulsory nature.

The Pittsburgh plant has a capacity in excess of fully metered requirements, and it is interesting to discover through cost analysis that no economy can be effected by metering the entire city at once, or, at any rate, in excess of that necessity to reclaim plant capacity from wasteful service to useful service, or additional demands, as conditions may require. In the case of Erie, however, the plant capacity has been reached under the present flat rate policy, and it is clearly evident, in the interests of economy, that a policy of metering domestic consumers should be adopted.

Metering may reduce domestic consumption more than half, which has the same effect as increasing plant capacity, and it is far cheaper to meter than to build additional plant. It would be poor economy—in fact, wasteful—to create additional plant capacity for the purpose of supplying flat rate consumers instead of placing them under measured service. Aside from discussion along lines similar to those above, we cannot see that flat rates have any place in scientific rate-making, for the reason that flat rates are subject to the laws neither of science nor of equity.

Measured Service

In the case of the city of Pittsburgh, the computed demand under fully metered conditions would show a reduction of 40 per cent from the present pumpage, which reduction represents no curtailment of useful service, but represents rather the reducible leakage and careless running of water to no avail.

There appears a common error among water-works men and engineers of overestimating the amount of water which will be used when a city is fully metered, this error resulting in a financial deficit as metering progresses. This tendency to overestimate is a logical result of a habit formed in designing plant capacity for maximum conditions, and such a designer carries this habit over into the field of rate-making, where he discovers, too late, that his measuring stick was too large and the revenue not realized as computed.

We have also observed a tendency, on the part of those inexperienced, to use present pumpage, of a flat rate system, as the starting point from which to forecast future revenue under fully measured service, apparently forgetting that there is no reliable relation between the two, and forgetting also that revenue is indicated by the dial on

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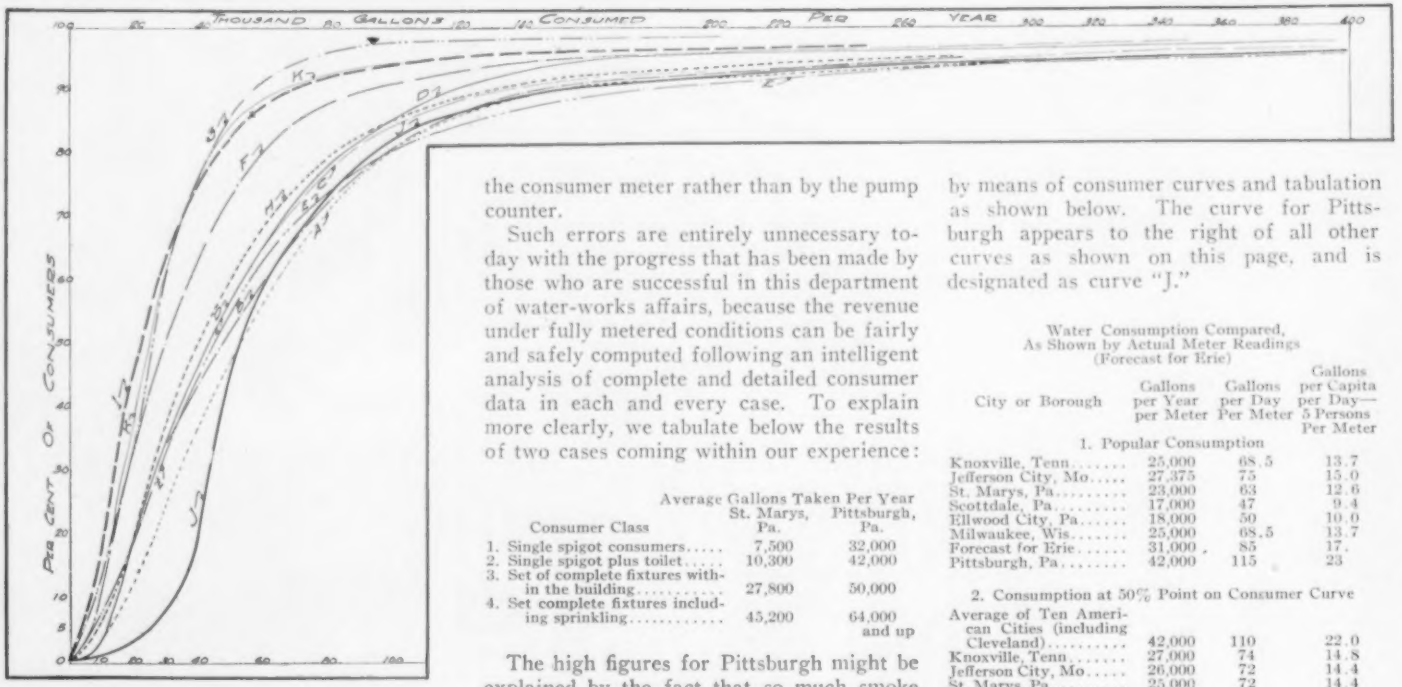


STUDY OF WATER CONSUMPTION BY METER MEASURE

Curves showing percentage of metered consumers taking less than indicated amounts of water

the consumer meter rather than by the pump counter.

Such errors are entirely unnecessary today with the progress that has been made by those who are successful in this department of water-works affairs, because the revenue under fully metered conditions can be fairly and safely computed following an intelligent analysis of complete and detailed consumer data in each and every case. To explain more clearly, we tabulate below the results of two cases coming within our experience:

Consumer Class	Average Gallons Taken Per Year St. Marys, Pa.	Pittsburgh, Pa.
1. Single spigot consumers	7,500	32,000
2. Single spigot plus toilet	10,300	42,000
3. Set of complete fixtures within the building	27,800	50,000
4. Set complete fixtures including sprinkling	45,200	64,000 and up

The high figures for Pittsburgh might be explained by the fact that so much smoke and dust demands more washing on the part of the public, coupled with the fact that the pressure at the spigot is rather high, being an average of 79 pounds and the maximum at different points in excess of 100 pounds. The divergence of the Pittsburgh results, in excess of the normal, is clearly shown by means of consumer curves and tabulation as shown below. The curve for Pittsburgh appears to the right of all other curves as shown on this page, and is designated as curve "J."

Water Consumption Compared,
As Shown by Actual Meter Readings
(Forecast for Erie)

City or Borough	Gallons per Year per Meter	Gallons per Day Per Meter	Gallons per Capita per Day—5 Persons Per Meter
1. Popular Consumption			
Knoxville, Tenn.	25,000	68.5	13.7
Jefferson City, Mo.	27,375	75	15.0
St. Marys, Pa.	23,000	63	12.6
Scottdale, Pa.	17,000	47	9.4
Ellwood City, Pa.	18,000	50	10.0
Milwaukee, Wis.	25,000	68.5	13.7
Forecast for Erie	31,000	85	17.
Pittsburgh, Pa.	42,000	115	23
2. Consumption at 50% Point on Consumer Curve			
Average of Ten American Cities (including Cleveland)	42,000	110	22.0
Knoxville, Tenn.	27,000	74	14.8
Jefferson City, Mo.	26,000	72	14.4
St. Marys, Pa.	26,000	72	14.4
Scottdale, Pa.	22,000	61	12.2
Ellwood City, Pa.	27,000	74	14.8
Madison, Wis.	36,000	99	19.8
Milwaukee, Wis.	42,000	110	22.0
Forecast for Erie	42,000	110	22.0
Pittsburgh, Pa.	52,500	144	28.8

The relation between fixtures and annual consumption was developed in the Pittsburgh case as shown by the following curve.

Distribution of the Burden

Meter rate schedules are generally one of three types:

1. Straight price to all per 1,000 gallons
2. Minimum charge type
3. Service charge type

2 and 3 are on the basis of either a straight price or a sliding scale, in addition to certain fixed charges. It is generally conceded as costing more per 1,000 gallons to serve a small consumer than to serve a large consumer, and if this fact be here admitted, we have thereby eliminated the straight-price or flat-price-to-all idea.

A minimum-charge type sliding-rate schedule can be constructed which would closely approach the costs of rendering the service, but the Public Service Commission of New York has ruled against the minimum-charge type in a gas case in the following words, which apply equally to water:

> "*The minimum gas rate is inequitable.* A sample case cited is the best proof. Mr. A. and Mr. B. are in the minimum class, which is placed, say, at $1. Mr. A. used 90 cents' worth of gas a month; he pays $1. Mr. B. used 20 cents worth of gas a month; he also pays $1. If the interest on the service investment to that residence or office is 50 cents, the company sustains a loss from Mr. A. of 40 cents that must be made up by some other consumer, while it has made a profit of 30 cents off Mr. B."

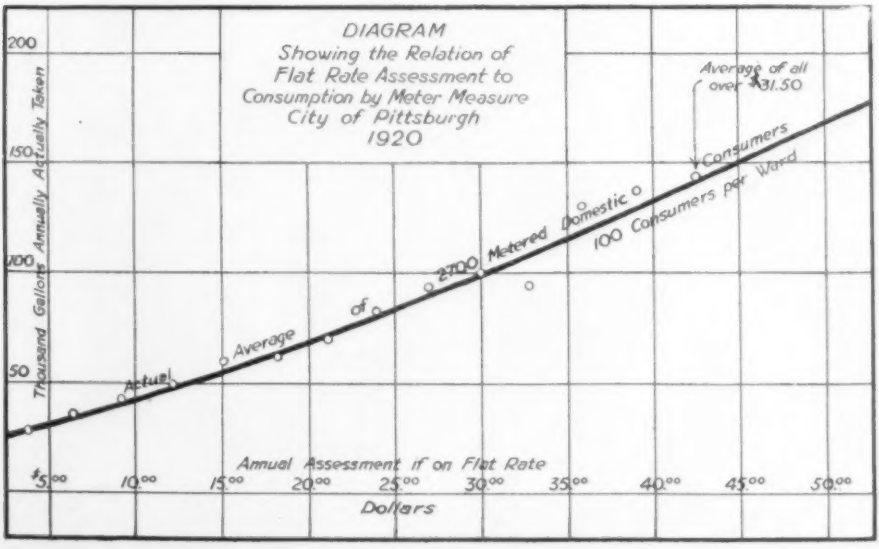
The service charge is recognized by the New York Commission in these words: "A service charge . . . is a legal and just charge if properly adjusted as to amount." The Association of Boroughs in Pennsylvania, on advice of its counsel, has recently withdrawn a proposed bill intending to make the service charge illegal in Pennsylvania. These and many other incidents seem to indicate to the writers the increasing recognition of the service charge.

Service Charge Limitations

Advocates of the service charge have included portions of the total annual burden under this charge, ranging all the way from "single consumer charge" to "entire fixed charge and overhead expense."

The writers maintain that a proper service charge is usually in excess of a simple consumer charge, but much less than the total fixed charges and overhead expenses, and have developed principles on which the service charge can fairly be computed as indicated in two examples appearing at the end of this discussion.

The service charge is based on the assumption that a company stands ready, under certain expense, to do a service or sell a commodity for which no purchaser may materialize. In so far as it is compelled to do so or is reasonably in danger of having to do so, the company is undoubtedly entitled to financial remuneration and to have its financial position insured.



It is not any fixed condition that may be applied empirically to all plants, but exists between two limitations which may be designated as the maximum service charge, when the plant stands ready to deliver and no water is taken, and the minimum service charge, when the size, diversity and variety of consumers maintain practically a constant demand on the plant.

It is assumed that in order to warrant any service charge, it must be shown that the conditions on which it is based actually exist; it must be a real condition and not based on any theory of what might or could happen. It must be based on common sense and actual facts developed from the operating conditions of the plant in question.

The full or maximum service charge may be said to exist when a plant is fully established with reservoirs full and pipe lines under pressure running at a rate just sufficient to offset leakage losses but with no one taking water. The minimum service charge exists in the case of a plant whose customers maintain a constant cycle of demands on the plant and where there is no loss due to standing ready to serve.

A typical example of the maximum service charge would be when a plant has one customer taking the entire output, but taking it at such irregular times and in such uncertain quantities that the plant is compelled to keep its entire equipment ready for operation at a moment's notice. The cost to this plant, even when no water whatever was taken, might easily be 90 per cent or more of its full operating cost. The plant is rendering what may be typically designated as a service as distinguished from the sale of a commodity, and it is entitled to remuneration therefor. The service in this case financially predominates over the sale of the commodity.

A typical example of a minimum service charge may exist with a large city plant having, say, 100,000 customers whose varied demands on the plant impose on it practically a fixed cycle of conditions hourly, daily, weekly and seasonally. Such a plant is usually so designed that it is practically at no actual expense on account of standing ready to serve a commodity for which there is no purchaser. Its function is the sale of a commodity as distinguished from mere readiness to sell. Practically speaking, the maximum loss directly imposed by failure of a purchaser is the loss incident to the service line, the meter and the reading and billing; these, having been determined, can be designated as a minimum service charge.

The maximum service charge may be considered in its application to a certain large city plant which serves about 100,000 customers at an average rate of about 15 cents per thousand gallons. If the theory of the service charge be carried to its logical sequence and it is assumed that all customers withdraw their patronage, the expense of this plant would still be over 90 per cent of its active operating expense. If this 90 per cent were provided for in a service charge, the price of the water would be about 1½ cents per thousand gallons, with the result that the plant would be on a flat rate basis and meters would be of no practical value. As a matter of fact, this plant (aside from fire protection) is not primarily in the business of furnishing a service, but of selling a commodity, and suffers practically no financial risk or possible embarrassment from standing ready to serve. It does lose the interest and maintenance on the meter in addition to the billing charges, when the customer fails to buy, and is entitled to collect this in the event of the customer's failure.

The two extremes in the type of plant have been taken to show the wide possible range of a service charge designed to meet the financial risk imposed on a plant in standing ready to serve. In one extreme, the service cost takes precedence over the commodity charge and amounts to practically the whole bill; in the other instance, the commodity charge takes precedence and nearly absorbs the service charge. The range of possibilities between these two extremes is infinite.

In the case of the Consolidated Ice Company vs. the city of Pittsburgh, it was necessary, in the interests of the city, to combat a theory which developed a high service charge and a low commodity charge, and we quote from the testimony of Mr. Finley in that case as follows:

"To maintain this condition in the Pittsburgh plant, even if no water were sold, means the pumping of about fifteen billion per year to keep the plant full. The cost of supplying these fifteen billion gallons, instead of the forty-five billions now handled, would be a large percentage of the present cost, substantially the entire cost, except as follows: the saving due to not pumping the thirty billion gallons which the

consumers now use would be about $350,000 (out of a total annual burden of about $2,650,000), and the ready to serve charge would be the total cost of production less this $350,000. If now the suggested method of allocating this charge according to the suggested basis in fixed quantities against the consumers is adopted and the $350,000 is allocated amongst the consumers according to the amount of water used, then, to all practical intents and purposes, the city is back again on a flat rate assessment basis, except for the fact that the consumer, in addition to the fixed amount laid up against him, would pay something over one cent a thousand gallons for the water consumed. This means that the entire economic value of metering would disappear. There would be no check on the waste of water, no personal interest on the consumer's part to eliminate waste, and the unnecessary outlay of capital in order to handle this waste would then obtain. . . If the art of supplying water to large communities is to make any economic progress, and there is no question as to the desirability of this end, it must not be defeated by any false rate hypothesis which takes but little account of the amount of water used and virtually harks back to the flat rate theory based on what might, or could, or should be demanded of the plant. The water meter is the instrument by which great advance in the economy of the art is to be effected. It introduces the element of self-interest in the relation of the consumer to the producer and produces a result which no amount of inspection, argument or propaganda can accomplish. It shows on its dial just what has happened to the plant regardless of the value of any orifice and what it might or might not have demanded. It reveals the big consumer and the little consumer in their true relations, and it is not surprising that many rate schemes have been developed, the purpose of which has been to defeat the objects of metering and to escape the responsibility of paying in accordance with the meter readings. Any such rate scheme which submerges the retarding influence of the meter on waste water, smothers the greatest opportunity for economic advancement available at the present day in the art of supplying water."

(To be continued in the May issue)

Courtesy Electric Merchandising

WELL-LIGHTED SUBURBAN HIGHWAY BETWEEN SCHENECTADY AND ALBANY, N. Y.

Proper lighting units placed at correct heights and intervals can make night travel almost as easy, safe and fast as day travel

An International Clearing-House of Civic Information

THE International Union of Cities—l'Union Internationale des Villes—was first organized in Ghent in 1913. It was interrupted by the war, but renewed with enthusiasm in Brussels in 1920. At the reorganization meetings Stephen Child, city planner, of Boston, was present and was delegated to further the interests of this Union in America. In connection with this work he spent some months during the summer of 1921 at the Brussels headquarters. He states that the main purpose of the Union is to collect and study contemporary documentary information of all kinds relating to civic affairs, and to distribute briefs or short reviews of such material throughout the world. The details of the organization are varied to suit the peculiar conditions of the nations interested. In Europe, for example, National Unions of Cities are formed, the cities themselves joining officially and paying fees dependent upon population.

For America, however, it is now proposed, after much study of our conditions and many conferences with leaders in civic affairs, to organize in Washington, in the Division of Construction and Housing of the Department of Commerce, a Bureau or Center to be affiliated with the International Center at Brussels. This American Center would then, in cooperation with the Library of Congress (which would act as Custodian of Documentation and rearrange its own rich stores of civic data to fit this need), collect and digest contemporary American civic data, contributing this to the international organization, would contribute thereto also a small sum annually as America's share toward the support of the Central Office, and would receive therefrom the invaluable current civic data from European and other civilized lands. Our National Center then would distribute freely to our progressive communities and civic organizations all these important data in regard to world-wide civic conditions, which they so greatly need and for which some of them now pay large sums of money through the expense of investigating committees.

These data are disseminated from Brussels by means of a series of pamphlets containing brief reviews of municipal documents. The notes or summaries are printed on one side of the page only, permitting members to cut them out and mount them on cards, assembling and classifying the items as they arrive month by month. To facilitate this process, each separate item is numbered in accordance with the Dewey system of decimal classification.

The note-books thus made serve as the necessary intermediary between the central collections and the administrative organizations, for whose use all the various collections are destined. By their means, all who are interested receive, in abridged and condensed form, the broad and intense movement of municipal activities revealed by the literature of civilized countries.

The work of organizing subsidiary centers is proceeding rapidly in France, Belgium, Italy, Holland, the United States, England, Germany, Spain, Portugal, Poland, Scandinavia, and many other countries. Eventually there will be established a world-wide organization through which it will be possible for all classes of its membership to receive not only the reviews of all contemporaneous municipal development, but also answers in considerable detail to particular questions. The organization of this service will take more time; it will, in fact, require additional funds and will therefore be available to members only on payment of nominal fees covering its cost. By this means, however, an affiliated member or organization—a city planning commission in America, for example—desiring to know more about a certain subject than is given in the brief reviews of the pamphlets, can receive all the details—facts, figures, and even photostat copies, plans, drawings and pictures, if desired. In this way the International Union of Cities will become in very truth an international clearing-house of civic information.

Municipal Finance

BONDING **ACCOUNTING** **TAXATION**

Is Your City Living Within Its Income?

ACCORDING to the latest available figures from the Bureau of the Census, three-fourths of the cities of the United States are living beyond their incomes. Figures are now available for 156 cities. Those for 71 were given in the December number of THE AMERICAN CITY, and those for 85 of the remainder are given herewith.

The dates covered are, roughly, the twelve months prior to June 30, 1921. For cities whose fiscal years do not end on that day, the figures given are for the last complete fiscal year prior to that date. The same exception holds for the three columns headed 1920-1917-1914. In some cases this should be read 1921-1918-1915, according to whether or not the greater part of the fiscal year in question lies in one or the other calendar year. The grouping is the most satisfactory that can be made for purposes of comparison without uselessly complicating the tables.

The tables headed "Costs" represent the entire expenses of the city for the year, and the same applies to the receipts. The columns headed "Surplus" and "Deficit" represent the difference between the expenses and the total revenues. The figures for debts include both the funded and the floating debts, minus the sinking fund assets, if any.

What May We Conclude?

When the former table was published in THE AMERICAN CITY, it seemed unwise to suggest many conclusions, as only 71 cities were represented. But with the figures for 156 cities at hand, it is possible to draw certain very definite conclusions, without resting the case upon the statistics for any one city, which, as was explained in the December issue, may be temporarily affected by extraordinary local conditions.

The first conclusion is that it would be highly desirable if the cities of the United States, possibly by state groups, would adopt uniform systems of classification of receipts and expenditures and accounting. There is at present the greatest diversity of classification, nomenclature, and method. While this does not appear in the consolidated tables given below, it is one of the outstanding features of the facts from which these tables were compiled.

The second conclusion is that American cities are badly in need of better budgeting. It is important that three out of every four cities are spending more than they are receiving; but it is not less interesting that some—a few—cities tax more heavily than they need to for their anticipated expenditures. The figures seem to indicate that in a great many cities—a large proportion, in fact—the so-called budget estimates either of revenue or expense are little more than guesses. It is, of course, impossible to predict exactly what the expenses or revenues of a coming year will be; but it is not impossible to have the two figures come within hailing distance of each other. Sometimes, however, totally unforeseen circumstances will arise which will disarrange even the most accurately prepared budget, and bring about, for instance, a very wide discrepancy between anticipated and actual expenditures. For that reason this conclusion, which is correct in general, should not be applied severely against any particular city without complete knowledge and thorough investigation of local circumstances.

The third conclusion is drawn from a comparison of the per capita funded and floating indebtedness of the cities. A city cannot offer its citizens the full advantages which they deserve, in the way of pavements, school buildings, parks and playgrounds, etc., without incurring large debts. These will be funded debts, and are quite

distinct from floating debts, which are often incurred without sound basis. Too often the floating debt is merely a device to cover imprudent spending to please the voters, without raising the taxes and so antagonizing the taxpayer. But the funded debt usually represents solid benefits to the community; and it is interesting to note that some cities carry a very light funded debt. Such cities may properly ask themselves if they are not being too thrifty—if they are not denying themselves certain advantages which would be worth far more than their cost, in public health, convenience and general welfare. It is no particular credit to a city to have an abnormally low funded debt if that means that the school children are badly housed, or that the city's streets are mud half the time and swirling dust the remainder.

The fourth conclusion is that it is difficult to establish a "fair" or average tax rate, or per capita cost of government. The cost of administering Mobile, Ala., was $19.25 per capita for the year, while the city government of Seattle cost every inhabitant over five times as much. The other cities range in between.

The reader, looking over the table, can draw other conclusions based upon his particular knowledge of cities and their local conditions. But not one can give these tables even the most superficial study without realizing the importance of such statistics and the practical benefit that will attend their careful consideration.

State and City	Per Capita Cost	Per Capita Receipts	Surplus	Deficit	Per Capita Debt Minus Sinking Fund Assets 1920	1917	1914	Form of Government
ALABAMA								
Mobile	19.25	18.75	....	.50	50.45	49.17	55.86	
CALIFORNIA								
Los Angeles	69.20	73.52	4.32	....	75.03	92.45	96.12	Council
Oakland	38.74	39.69	.96	....	40.66	43.56	54.48	
Pasadena	73.57	67.69	....	5.88	52.58	59.20	73.22	City Mgr.
San Francisco	53.04	51.99	....	1.05	96.75	88.65	92.60	
San Jos6	21.77	22.74	.98	....	43.21	30.73	31.56	City Mgr.
CONNECTICUT								
Bridgeport	52.54	46.24	....	6.30	75.68	58.61	21.64	
GEORGIA								
Atlanta	31.71	31.49	....	.22	17.58	22.48	28.09	
Augusta	40.97	44.84	3.87	....	63.57	71.04	66.81	
Columbus	33.14	28.46	....	4.67	33.30	....	....	
Macon	31.74	29.21	....	2.53	37.41	33.15	29.56	
ILLINOIS								
Chicago	47.99	40.89	....	7.10	32.31	28.30	27.34	Council
Cicero	27.14	23.88	....	3.26	13.72	....	....	Pres. & Trustees
E. St. Louis	24.97	27.79	2.82	....	29.86	26.01	21.57	Commission
Evanston	42.13	36.19	....	5.94	15.19	....	....	Council
Oak Park	35.46	35.64	.17	....	34.64	....	....	Pres. & Trustees
Quincy	37.46	35.79	....	1.67	6.44	8.20	9.83	
INDIANA								
Gary	48.11	42.51	....	5.60	16.02	15.38	....	
Indianapolis	38.58	33.40	....	5.18	46.82	23.43	18.19	Council
IOWA								
Cedar Rapids	48.32	39.25	....	9.07	36.35	23.79	24.18	
Council Bluffs	45.52	34.88	....	10.64	42.45	29.07	29.47	Council
Des Moines	52.97	44.03	....	8.94	56.36	45.99	32.02	Commission
Dubuque	34.31	32.15	....	2.16	21.47	21.18	26.56	
KANSAS								
Wichita	50.62	32.01	....	18.62	40.58	26.07	36.52	Commission
MASSACHUSETTS								
Boston	65.48	71.38	5.91	....	107.29	117.66	116.47	Council
Cambridge	46.33	50.60	4.28	....	51.80	58.53	67.23	
Chicopee	48.50	39.98	....	8.52	37.83	....	....	
Fitchburg	45.42	41.26	....	4.16	49.41	46.12	42.46	
Haverhill	36.10	35.74	....	.37	22.81	28.85	35.39	
Lawrence	36.31	40.95	4.64	....	34.04	49.04	28.21	
Holyoke	61.41	57.40	....	4.01	48.55	49.90	54.57	
Lowell	43.11	35.01	....	8.10	37.10	29.14	24.52	
Malden	33.97	35.22	1.25	....	26.99	28.06	26.99	
New Bedford	51.59	45.84	....	5.75	72.90	75.07	74.98	
Newton	72.91	69.43	....	3.48	50.60	51.42	64.03	
Springfield	54.00	47.80	....	6.20	69 26	64.77	71.12	
Waltham	43.29	38.65	....	4.64	22.78	14.41	....	
MICHIGAN								
Battle Creek	49.88	46.45	....	3.43	22.62	8.36	....	
Grand Rapids	41.57	39.67	....	1.90	31.20	31.23	30.74	
Pontiac	64.19	35.98	....	28.21	74.51	....	....	
MISSOURI								
St. Louis	40.57	39.55	....	1.02	19.42	23.21	30.17	Council
NEW JERSEY								
Atlantic City	69.13	65.53	....	3.59	151.16	150.32	142.86	
Bayonne	65.32	46.54	....	18.78	90.03	28.79	40.03	Commission
Camden	34.12	28.60	....	5.52	43.92	43.69	42.11	

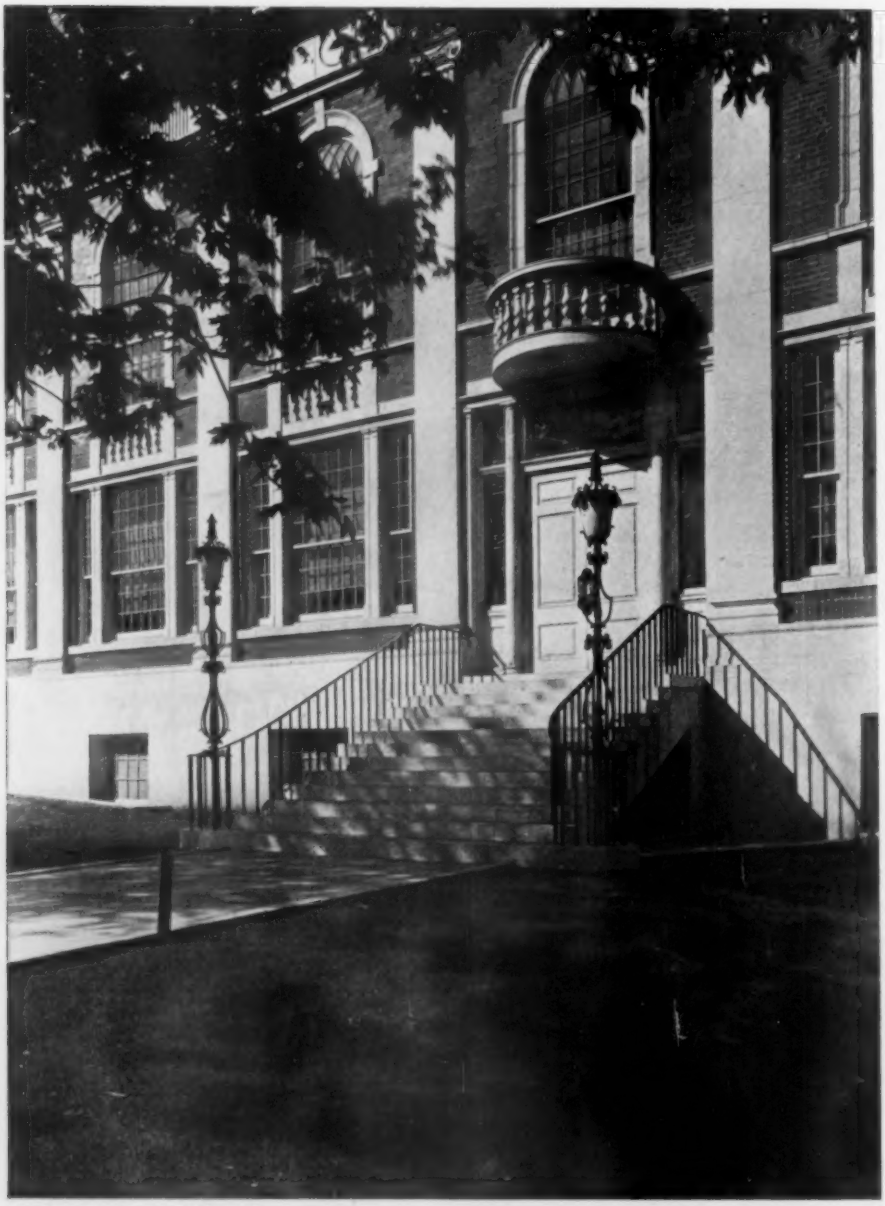
State and City	Per Capita Cost	Per Capita Receipts	Per Capita Surplus	Deficit	Per Capita Debt Minus Sinking Fund Assets 1920	1917	1914	Form of Government
Elizabeth	33.33	27.77	....	5.56	24.49	28.96	38.18	
Hoboken	79.22	39.94	....	39.28	59.63	59.72	44.21	Commission
Passaic	29.77	25.16	....	4.61	50.61	38.05	38.12	Commission
Perth Amboy	57.98	36.53	....	21.45	41.46	53.62	38.83	Council
Trenton	33.25	38.69	5.44	....	47.57	27.10	25.38	
W. Hoboken	22.52	23.37	.85	....	23.45	25.32	26.33	Council
NEW YORK								
Auburn	40.04	37.79	....	2.25	18.37	19.33	16.31	
Buffalo	57.13	55.28	....	1.85	70.58	71.23	70.58	
New York	59.53	53.49	....	6.04	182.93	186.11	179.44	
NORTH CAROLINA								
Wilmington	32.86	25.56	....	7.30	75.45	60.55	....	
Winston-Salem	39.46	27.05	....	12.41	58.25	51.29	....	
OHIO								
Canton	43.40	26.43	....	16.97	98.05	60.23	41.90	
Cincinnati	53.48	48.15	....	5.34	190.06	167.76	152.41	Council
Columbus	55.38	38.70	....	16.68	59.93	44.04	48.68	Council
Portsmouth	22.96	24.12	1.16	....	73.47	....	....	Council
Springfield	27.36	28.16	.80	....	41.77	42.71	40.69	
Youngstown	40.93	26.25	....	14.68	66.95	47.45	37.29	
OKLAHOMA								
Oklahoma	48.98	33.55	....	13.44	73.23	65.82	62.37	Commission
Muskogee	40.23	43.26	3.03	....	100.32	76.34	84.65	City Mgr.
PENNSYLVANIA								
Chester	21.56	17.29	....	4.27	33.80	23.99	27.28	Commission
Harrisburg	30.20	29.74	....	.46	42.92	35.26	39.45	Commission
Lancaster	16.77	17.93	1.16	....	27.17	30.52	25.68	Council
Pittsburgh	63.01	54.28	....	8.75	107.91	95.08	93.13	
Scranton	23.18	21.85	....	1.33	18.49	21.93	19.03	Council
TENNESSEE								
Memphis	33.89	35.26	1.37	....	87.90	90.79	88.01	Commission
Nashville	29.08	26.36	....	2.72	74.63	63.12	53.10	Commission
TEXAS								
Beaumont	32.11	29.51	....	2.61	47.62	....	....	
Dallas	49.02	35.95	....	13.07	62.89	43.51	53.26	
Galveston	33.85	35.51	....	1.67	105.08	123.74	125.45	
UTAH								
Ogden	48.96	35.29	....	13.67	59.88	38.70	....	
VIRGINIA								
Newport News	31.03	19.19	....	11.85	39.87	....	....	
Norfolk	62.22	36.31	....	25.91	105.31	87.91	84.45	
Portsmouth	29.61	21.92	....	7.69	94.35	47.13	44.99	
Richmond	35.56	39.91	4.35	....	83.33	76.09	80.29	
WASHINGTON								
Seattle	107.72	91.39	....	16.35	180.12	118.54	114.24	Council
WEST VIRGINIA								
Charleston	34.33	30.55	....	3.77	42.24	32.06	....	
Huntington	26.76	27.70	1.03	....	34.99	34.45	34.33	
Wheeling	41.19	27.39	....	13.79	23.46	19.20	22.93	
WISCONSIN								
Racine	45.97	37.94	....	8.03	26.95	18.29	19.87	Council
DISTRICT OF COLUMBIA								
Washington	51.63	55.42	3.79	....	2.60	9.40	16.26	

The Growing Demand for Noiseless City Streets

That there is a growing demand for less noise in city streets is shown in the clamor among citizens and officials in New York and other eastern cities for a type of pavement that will reduce the noise of heavy motor traffic. Clifford Pinckney, City Engineer of Manhattan, recently adopted the resilient asphaltic concrete base for Fifth Avenue with this end in view, claiming that this type of construction takes up the shock of impact. The Public School Principals' Association of Newark, N. J., has asked the City Commission in that city to adopt a paving construction program to extend over four years that will provide noiseless pavements in the vicinity of the schools. In voicing this attitude, Newark takes the lead in this respect among the cities of the country. The complaint in Newark is that the constant noise caused by heavy vehicles running over rough or rigid pavements prevents both teachers and pupils from carrying on their work effectively. It is the benef of the principals that the greater efficiency permitted by pavements that are smooth, resilient and noiseless will more than compensate for the additional cost.

The action in Newark is in line with conclusions long since reached by hospital authorities everywhere and by the owners of theaters and auditoriums in many places. Professor Stevenson of Rutgers College, in a recent address before the Philadelphia Engineering Society, emphasized the importance of noiseless street pavemnts.

An Attractive School Entrance



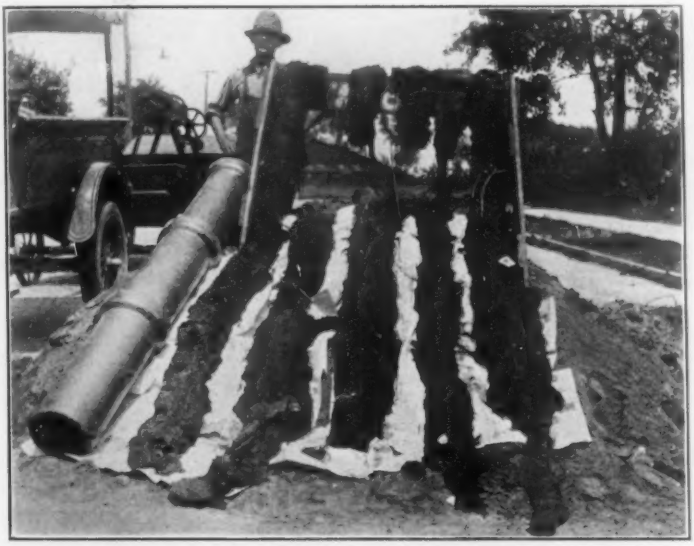
Courtesy Architectural Record

ENTRANCE STEPS OF HIGH SCHOOL AT PORT CHESTER, NEW YORK
Hewitt and Bottomley, Architects

Clearing Roots From Sewers

Fifteen Thousand Feet of Sewer in Schenectady, N. Y., Freed From Obstructions

IN the last year the Department of Public Works of Schenectady, N. Y., has removed root growths from more than 15,000 feet of sewers under the direction of Charles Hayes, Superintendent of Sewers. Only the sections of the city where conditions were the worst were selected for the first operations. The cost of the cleaning operations was $1,300 for labor, and the interest and depreciation on the Turbine sewer cleaner and other equipment amounted to approximately $1,050.



THIS ARRAY OF ROOTS FROM 100 FEET OF SANITARY SEWER ON LINDEN STREET, SCHENECTADY, QUITE EFFECTIVELY HELD UP THE FLOW OF SEWAGE

If an attempt had been made to excavate, clean and replace the sewers which had been blocked by root growths, the cost would surely have exceeded $10,000. The work of cleaning the sewer was delayed for some time at the beginning in order to build several new manholes, as the cleaner could not be used in sections where the manholes were more than 450 feet apart.

The machine used consists of a water motor equipped with guides and cutters to adapt it for use in sewers of varying diameters. The cleaner is placed in the sewer main at one manhole and drawn to the next one by means of a steel cable attached to a hand-operated windlass. Jointed rods are forced through the sewer first, and it is to these rods that the cable is attached while it is drawn through. In some cases the department has found sewers so badly clogged that it was very difficult to force the rods through the entangled growth.

The cutter of the machine is revolved by the water motor, which is run by water pressure supplied through lengths of fire hose attached to the nearest hydrant. The water discharged from the motor flushes out the roots and discharges them at the next manhole below, where they are caught and removed to the street.

In Schenectady there are about 150 miles of sewer mains with pipe joints every two or three feet, through which it is possible for tree roots to gain entrance. Several years ago an ordinance was passed requiring the removal of all poplar trees within a

THE MACHINE THAT REMOVED THIS PILE OF ROOTS AND DIRT FROM 151 FEET OF 8-INCH SEWER IN SCHENECTADY

specified time. The sewer department, however, found that the roots of soft maples and elm trees were causing almost as much trouble in the sewers as the poplar roots, and they are much more difficult to remove. In a few cases the roots were found to be so thick that it was necessary to remove sections of the sewer pipe to get them out.

Building Up a Municipal Light and Power Plant

The Interesting Growth of the Municipal Plants at Greenville, Texas

By H. L. McLow

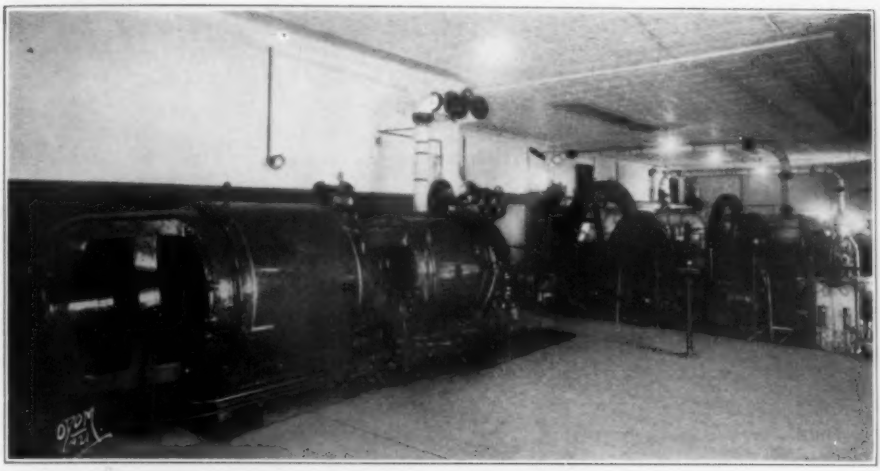
Commissioner No. 1, Greenville Municipal Plants, Greenville, Texas

THE original municipal light and power plant at Greenville, Texas, was installed in 1890 and consisted of one belt-driven, 200-kilowatt generator. A bond issue of $15,000 was issued and applied to the construction of this plant, which was located in the down-town section. In 1909, under the leadership of Mayor Nichols, a bond issue of $50,000 was authorized and two new Allis-Chalmers units were installed at the present location in connection with the Greenville water-works, and the present light and power system was established. The writer has been in charge of the development and administration of the combined plants since 1913.

Over $100,000 has been expended in securing new equipment and in expansion since 1916. Every cent of this has come out of the revenue of the plant, and no bond issues have been sought. The total amount of bonds issued since the plant was instituted, including all outstanding indebtedness incurred by the city of Greenville on account of its electric light and power plant, is $65,000, of which there remains outstanding only about $41,000 in less than 5 per cent bonds. The commercial value of the electric light and power system of Greenville is estimated at $500,000. Space is already allotted for a 1,000-kilowatt steam turbine, which will be the next unit to be added.

The street and commercial lighting services are on independent circuits, and a third independent circuit is being installed for power service.

Notwithstanding the high cost of coal, material, labor and operation in general since 1916, there has been no increase in the light and power rates to consumers, and the plant has been successfully operated for the past eight years at the rates given below. The income from these rates has taken care of all charges, including the retiring of



INTERIOR OF POWER-PLANT OF THE GREENVILLE, TEXAS, LIGHT AND WATER WORKS

bonds, and, as reasonable proof that the plant has been adequately maintained, it has been out of commission only 25 minutes during that period.

LIGHTS

First 100 kw. at 10 cents
Next 200 kw. at 9½ cents
Next 200 kw. at 9 cents
Next 500 kw. at 8½ cents
Excess 1,000 kw. at 7½ cents
Minimum charge 50 cents per month

POWER

First 500 kw. at 4 cents
Next 500 kw. at 3½ cents
Excess 1,000 kw. at 3 cents
Minimum charge 75 cents first horse-power or fraction
50 cents each additional horse-power or fraction

3 cents kw. for stoves, without minimum charge

This plant supplies all of the electric light and power in the city of Greenville and in the territory five miles beyond the city limits. It maintains itself without any tax on the people and operates 2,100 street lights, 295 white way lights, gives light and power to the public schools, municipal buildings, parks and playgrounds, and takes care of all maintenance and operation charges and all expansion and improvement, interest and sinking fund for the bonds originally issued for its installation. In 1913 the plant capacity was 1,000 kilowatts per day, and in 1921, 6,950 kilowatts a day is obtained regularly from the 5,000-kilowatt turbine alone.

Paving Assessments in St. Paul, Minn.

In St. Paul, Minn., the cost of not exceeding 12 feet of paving can be assessed against abutting property. This is based on the theory that all city streets should have paved roadways for comfort, convenience and sanitation, and that the property abutting on the pavement should pay for such a part as may be required to give access to that property and provide a passageway for vehicles going to neighbors' property.

With a 24-foot pavement and a vehicle standing at the curb on opposite sides, there will be room for a vehicle to pass between. If any greater width of paving than 24 feet is necessary, it is for the purpose of a street car line, motor bus traffic or through traffic.

Abutting property is not assessed for paving the street railway portion of the street, and there is no reason why it should be assessed for paving the right of way for trucks, motor busses or pleasure cars bound for some distant part of the city. While not more than 12 feet can be assessed against the abutting property, the city council can to its discretion assess the cost of less than 12 feet. This enables it to pave outlying street connections with county highways or state roads where the property could not stand the entire assessment for the pavement. The cost of the paving that is not assessed is met through a wheelage tax, general revenue or a bond issue.

Rat Extermination and Its Part in Public Health Campaigns

By Edmund B. Besselievre
Consulting Engineer, New York

THE rat has been convicted of being one of the most serious offenders in the spread of disease and the destruction of property. On the evidence presented by sanitarians and public health officials, the systematic extermination of the rodent is now recognized as an integral part of all comprehensive health campaigns.

In the Southwest, and especially in the states along the Gulf Coast, the rat has become abhorrent as the primary agent in the spread of bubonic plague, epidemics of which have caused great loss of human life and property in several cities in that region. The cities and states that have been afflicted with that terrible visitation are strenuous advocates of rat extermination, and it would be wise for other municipalities and states to follow these examples and include exterminative measures in their general health programs.

It has been stated on excellent authority that the rodent population of the United States is equal to the human. In that case, the problem of rat extermination would be easily solved if each of us would take upon himself the task of killing one representative of the genus "Mus." We could aptly adopt as the slogan for such a campaign

"Get Your Rat."

The individual effort, however, should not cease with the getting of the one rat. In view of the inefficiency of many of us, each of us should "get" as many rats as possible.

Exterminative measures are of different kinds. It is seldom sufficient to employ one only. Usually a combination of several methods is adopted and proves to give the quickest and most effective relief.

Methods of extermination may be divided into three general classes:

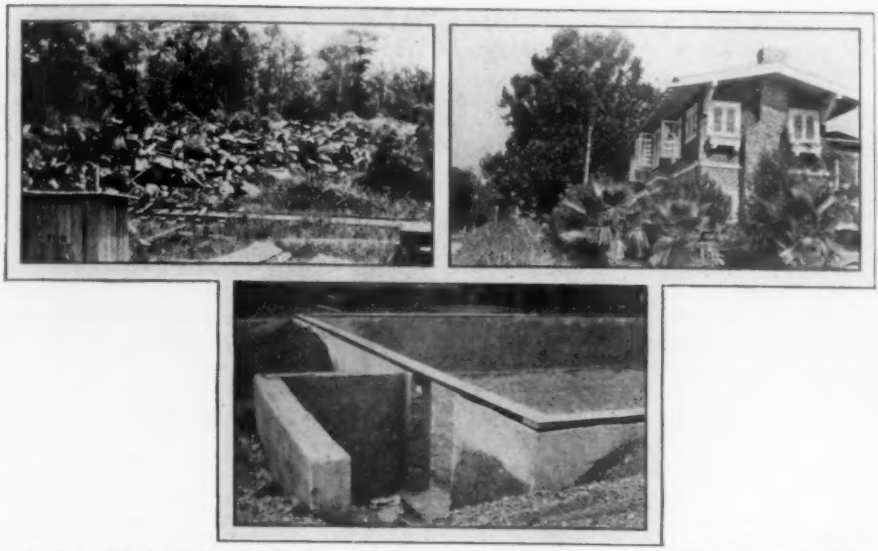
1. Natural
2. Mechanical
3. Chemical

These three classes cover the general basic agencies now in use among sanitary engineers and public health officials, and each one of them includes several types or subdivisions, each particularly applicable to some combination of local conditions.

A brief article does not permit explaining in detail the means of applying each method, but a casual discussion of them from the view-point of expediency and efficiency will serve a useful purpose:

1. Natural agencies
   - a. Starvation
     By removal of sources of food supply and by proper protection of foodstuffs and other rodent comestibles
   - b. Suffocation
     By effectual closure of exits from burrows or harborages
   - c. Natural enemies
     Use of cats, dogs, ferrets and other natural enemies
   - d. Destruction or removal of harborages and breeding-places
2. Mechanical agencies
   - a. Trapping
     By cage or snap traps set and baited by volunteer or paid trappers
   - b. Destruction of breeding-places
     By tearing down, boarding up, fire, etc.
   - c. Ratproofing
     By proper ratproofing of dwellings and business establishments, particularly places where foods are stored
   - d. Shooting
     By regular roundsmen or organizations of Boy Scouts and others
   - e. Drowning
     By flooding burrows and holes with water, with the possible assistance of the fire department, etc.
3. Chemical agencies
   - a. Poisoning
     By means of standard brands of manufactured rat foods and poisons
   - b. Suffocation
     Through the use of noxious gases and fumes in burrows and inaccessible places where rats are known to harbor

Each of these methods has its peculiar degree of fitness in certain cases. Some of



SCENES FROM THE SOUTHWEST WHERE ANTI-RAT CAMPAIGNS HAVE BEEN PUSHED EFFECTIVELY

Upper Left—A city dump where plague-infected rats were found. Upper Right—Shrubbery near this residence must be trimmed out and the building raised to an elevation of 18 inches from the ground or a "chain wall" placed under the building. Below—Proper foundation for a bungalow to insure protection from rats

them are more generally adaptable in public campaigns than in cases of single dwellings or foci.

In the several campaigns for the eradication of bubonic plague with which the writer has been connected, the combination of methods that procured the maximum degree of extermination in the shortest space of time were starvation, destruction of breeding-places, trapping and ratproofing, and in cases where shipping was involved, the employment of chemical suffocation.

While the destruction by natural enemies would seem to be one of the easiest and cheapest plans to adopt, it is not encouraged by experienced officials, especially in those localities where rat-borne diseases are present. It is true that the cat and the ferret and the smaller members of the canine family can reach the rat in places where ordinary human agencies would fail, but should the rat be infected with bubonic plague or some other disease, the fleas with which he is infested will upon his death emigrate to the fur of the animal which has killed him. In the case of the cat or the dog, which is usually allowed in the house, the disease-bearing flea is then carried directly into contact with humans.

Shooting is seldom employed on a large scale, as it requires a fairly expert marksman to shoot and kill a rat in the short time in which Mr. Rat allows himself to be seen in human presence. Usually the result is a wounded rat, which will crawl into the nearest hole or burrow, there to die and remain as a noisome reminder of an ineffectual method. Drowning is not wholly satisfactory, because it is difficult to discover the proper hole in which to apply the water. Rat burrows usually have several exits, and if any one of them is left open, the water has no effect.

Poisons are often efficacious in individual houses or in places where doctored meat or food can be placed in the rat's path of travel, but the use of this method is discouraged in a general campaign. The chunks of poisoned meat or other food are just as attractive to a hungry cat or dog as to a rat, and if promiscuously distributed, may cause angry pet-owners to make their presence felt around campaign headquarters.

Noxious gases have been tried, but, outside of their general use on board ships, have proved to be of no great service. They are dangerous to human life unless expertly handled, and it is very difficult to close all

the cracks or vents in an ordinary building to make the gas effective. On shipboard, where all ports are provided with tight closures, the use of hydrocyanic acid gas has been adopted as the standard means of fumigation and has given very encouraging results. Even there, however, careless handling and improper airing of the hold of a vessel have several times caused the loss of human life. Hydrocyanic acid gas is odorless and colorless and takes immediate and deadly effect.

Properly conducted campaigns of rat-proofing, rat-trapping and destruction of possible rat harborages will go further to eliminate the rat population of the United States than any other combination of methods so far employed. The states of Texas and Louisiana have issued pamphlets and circulars descriptive of these methods. Municipalities will do well to enlist the cooperation of the organized health agencies of these states.

Let each municipality set aside a certain period of days wherein a concerted effort shall be made to destroy as many rats as possible, and let the war-cry of the cause be

"Get Your Rat."

Motion Pictures Show Road Building

THE United States Bureau of Public Roads, Washington, D. C., has completed for free distribution and use in picture houses as well as at conventions, educational conferences, etc., throughout the country, two reels of pictures showing in detail the construction of the various types of asphalt roads. The pictures were produced particularly for the purpose of showing how best results may be obtained in asphalt construction. They are loaned to responsible parties free of charge, except for transportation costs.

The first reel, entitled "Building Bituminous Roads," indicates the wide application of bituminous materials in highway construction. It shows the character of the bituminous materials and demonstrates the principal laboratory tests used in determining their suitability for the various types of roads to meet various climatic and traffic conditions. A portion of the reel shows in detail all the various steps that should be taken in surface-treating a macadam pavement. This scene opens with a large motor truck distributor spraying the bituminous material upon a macadam surface in the suburbs of Philadelphia, Pa. The distributor is followed closely by a horse-drawn wagon spreading the stone chip covering. The bituminous macadam pavement is a type much superior to plain or surface-treated macadam. In its construction the asphalt is treated and applied either by mechanical or by hand distributors.

The use of the small hand pouring pots in applying the asphaltic binder is demonstrated on a road near Pittsburgh, Pa. This demonstration is followed by views showing the mechanical distribution of the asphalt by motor trucks on a project in Westchester County, near New York City. The trucks are first shown loading at a railroad siding from huge tank cars. They then leave for the road, where the material is applied under pressure at the rate of one and one-half gallons to the square yard. Laborers are pictured covering this material with stone chips. A powerful roller then compacts the pavement. The road is then shown, by the passing of traffic, to be ready for immediate use. According to engineers, one of the big advantages of asphalt pavements is that they can be opened to traffic as soon as constructed.

The second reel, entitled "Building Mixed Asphalt Pavements," shows methods used in constructing both the asphaltic concrete and the sheet asphalt types of pavement. This reel contains views of plants at Pittsburgh, Pa., and Columbus, N. J., where the stone, sand and asphaltic binder are heated and mixed. The "mix" is loaded upon trucks and hauled to the road. Here it is spread with rakes and then compacted by a roller. This picture shows that the mixed types may also be opened to traffic immediately after their completion. The pictures demonstrating the construction of asphaltic concrete roads were taken on a new road under construction between May's Landing and Pleasantville, and leading into Atlantic City, N. J. The pictures of sheet asphalt construction were taken on a road near Columbus, in Burlington County, N. J. This county now has sixty miles of sheet asphalt.

The Public Utility of Museums

By John Cotton Dana
Director, Newark Museum Association, Newark, N. J.

"PUBLIC utility" is a phrase borrowed from Lord Sudeley, of England, who has in recent years written much and spoken often in the House of Lords in favor of an increase of the work of museums in the field of general education. The Newark Museum, in the twelve years of its existence, has done all that its modest collection, limited income and restricted quarters in the Public Library building would permit, to make its objects and the labors of its staff of interest and value to its owners and supporters, the people of Newark.

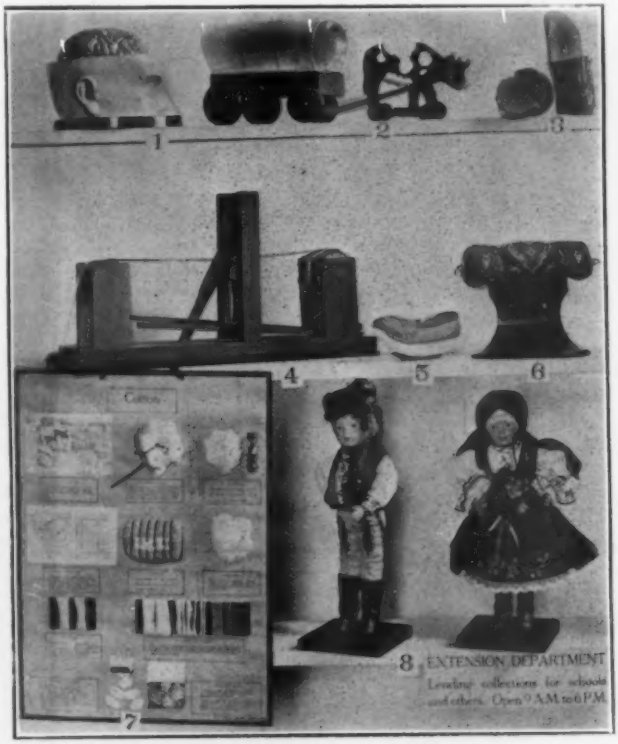
We begin with the children of the city, of course. For them we have several thousand objects which teachers in the schools use to make books and studies more attractive and intelligible. The teachers select what they wish, and the Museum sends to their schoolrooms two loads, in vans, each week.

In the Museum is a room in which are always shown objects of interest to children, and often collections made and put up by children themselves. For a time, when space was available therefor, the curator of this "Children's Room" encouraged boy and girl collectors to form clubs to study birds, plants, stamps, wireless, etc., and these clubs prospered.

Our "theory of public utility" asks that we join with our public school teachers, our Shade Tree Commission, our County Parks Commission, our scientific clubs, etc., in developing, in our city and county parks, institutions with appropriate shelters and buildings, which will promote interest in all aspects of outdoor life, in natural history, etc., with the Museum as an attendant and helpful spirit. This plan is here mentioned even though it has thus far been a subject for discussion only, because it speaks so clearly of our conviction that cooperation with existing agencies is fundamental to our theory of museum work.

Other Civic Organizations Must Use the Museum

To produce tangible results in the educational field, the Museum must ask teachers and managers of public and private schools not only to make use of its objects, but also to tell it, the Museum, what material they can best use, how they wish to have that



THE NEWARK MUSEUM LENDS THESE OBJECTS TO SCHOOLS

material prepared, and what direct personal assistance they can render in making the whole museum of "educational utility" to the community.

Museums have been content to acquire, preserve, describe and place on view objects within their chosen field, and then to say, in effect, that their duty is done, in that they give to those who wish to use them an excellent opportunity to come and see, and to learn of the worlds of art and of science, as their collections expound those worlds. The supporters of museums have been in large measure content to see museums assume this attitude of self-satisfied seclusion; but they begin now to realize that other existing public-supported agencies, established to expound the worlds of art and science to their supporters, can readily take and use much of the contents of museums and, with their aid, can add much of interest and effectiveness to their own educational activities.

England has begun to use museums in the field of industry. Finding that existing museums are, with rare exceptions, not even attempting to come into close and helpful contact with manufacturers, bench-workers, craftsmen and designers, it has formed an organization which is trying to give to these people an opportunity to learn from one another, and from their like in other countries, by displays of the factory and studio products of to-day. In Newark we were moved to attempt this work several years ago. To do it we needed the assistance of local manufacturers and importers, and we found it difficult to demonstrate to them the advantages that would follow the development in their city of a museum of "comparative industry"; a museum, that is, which should carry out the plan England is now developing, and should prepare for our producers, merchants and transporters a series of displays of local products with like products of other cities.

We therefore took a wider range, that of the whole state of New Jersey, and in two successive years collected and showed thousands of finished objects, and objects illustrating processes of production, in the fields of clay and of textiles. The two exhibitions were, of course, only modest experiments, but they seemed to demonstrate the truth of that part of the theory of the value of "greater public utility of museums" which lies in the statement that a public museum should present its supporting community to itself as an organization functioning for production.

Museums Should Expound Foreign Industrial Conditions

It is a habit of museums to gather from other countries things rare and peculiar—old art products, objects explanatory of religion and social manners and of the development of these. That is, they gather art curios and ethnological specimens.

That is all as it should be. But museums should also gather and display objects which, with the help of maps, charts, diagrams, legends and pamphlets, shall expound to farmers, workers, manufacturers and distributors the resources, products and potential needs of other countries. These displays need not be and should not be permanent. They would include no "museum pieces," those things that persistently so obfuscate museum managers as to make them unable to see the moving picture of the world as it is. These presentations would, each for a few weeks or months, present to our makers, buyers and sellers the industrial aspects of a given country, and then would be dispersed.

In Newark we tried out this suggestion and produced, in due course, quite an interesting picture, in object, map and legend, of the Republic of Colombia. Again this was an experiment only; but it seemed to show that any museum can arouse in its community an alert and informed interest in the character and the future of any country whatsoever.

Other museums which can be called veritable public utilities are the American Museum of Natural History in New York, which has long pursued "public utility" and overtaken much of it, as any layman can learn who will send for a sample copy of its beautiful monthly journal, *Natural History;* the Philadelphia Commercial Museums, which pursue not only the industrialist to his great pleasure and profit, but also Pennsylvania's public school system to the gratification of its teachers, as one can learn by asking for a copy of one of its recent reports; and the Educational Museum of St. Louis, which is more than a museum that helps on the work of the city's public school system, for it is a component part of that system itself.

How a Municipal Plant Kept Down the Cost of Gas and Water

By D. A. Reed

Manager, Water and Light Department, Duluth, Minn.

THE history of the Duluth gas and water plant dates from the year 1883, when the work of construction was inaugurated by the Duluth Gas and Water Company, a private company organized for that purpose.

The source of supply for the water was about a mile east of the center of population, on the north shore of Lake Superior, with an intake extending some 700 or 800 feet into the lake. The water at this location became so contaminated in the next five or ten years by sewage discharged from several sewer outlets that two violent typhoid epidemics resulted, with 60 to 70 deaths. The rates were high, the service poor, and the water bad. Several attempts were made to purchase the plant, and several times when the question was submitted to the people it was either lost because of the high price asked, or because of invalidation by the court.

The first price considered was over two million dollars. The plant was finally purchased and turned over to the city in 1898 for $1,250,000. At that time there was 40.6 miles of water-mains and 29.56 miles of gas-mains. At present there is approximately 185 miles of water-mains and 175 miles of gas-mains, which represents a plant over five times its original size when taken over by the city 23 years ago.

The gas plant has been moved to a new and more favorable site, and two new holders of 200,000- and 500,000-cubic-feet capacity have been erected in addition to a new holder of 1,000,000-cubic-feet capacity erected by the Zenith Furnace Company, the concern from which gas is purchased at the present time.*

During this 23-year period the total number of water customers has increased from 2,113 to 13,826, and the gas customers from 1,111 to 15,571, or an increase of over 9 to 1. The value of the plant has increased from $1,250,000, the sum paid for it in 1898, to $5,487,333.08 on the first day of January, 1921. The average number of gas meters per mile of mains has more than doubled, and the number of water meters has trebled.

Not only has the water plant paid its way, has been self-sustaining, but the customers, who have furnished all revenues, have acquired a proprietary interest in the plant of nearly a million and a half dollars. It has created a depreciation reserve of nearly one million dollars, has passed the peak of its indebtedness, and is now steadily retiring its bonds as opportunity offers for their purchase. Except for a refunding issue in 1906 of $295,000, none of the bonds have yet become due, and none will mature until 1926; consequently, they cannot be retired, except on the consent or request of the holder. With one exception, every bond that has been offered has been retired. How has it been accomplished? From its earnings? With one exception, every cent of it.

For a brief period the taxpayers contributed a one-half-mill levy for the support of the water and light plant. It was quickly recognized, however, as being a mistake, and the income was relinquished, on the suggestion of the department itself, in 1914. With this exception, the plant has never received a cent of support from the city, the taxpayers or any other interests, except what it has honestly earned by service rendered, and it has not always received pay for that. True, it does not pay taxes, but it renders a service to the taxpayers in its hydrant service that costs the department $110,000 a year, and which, if the city of Duluth had happened to be just across the river in the state of Wisconsin, the Wisconsin Railway Commission would have ordered paid. The city allows about one-half of this amount, or $55,000 a year, for the hydrant service that costs the department $110,000.

* No gas has been made at the Duluth plant since 1908. The Zenith Furnace Company operates a smelter and coke oven plant. The gas is generally considered a by-product, although at the present time the company is making only coke and gas, not having operated the smelter for some months. The city's contract price with the Zenith Furnace Company is 37½ cents a thousand cubic feet for all gas except that used for house-heating purposes. The house-heating gas is 32½ cents. Owing to the fact that the company has for the past few months been operating only its coke ovens, the department has been paying a flat rate of 40 cents per thousand cubic feet.

The difference between the cost of this service and the amount paid for it by the city may be fairly considered as a contribution in lieu of taxes.

The Question of Rates

Since 1898, when the city took over the plant, the following rates have been in effect:

GAS

	Light	Fuel
1898	$1.90	$1.00
1899	1.40	1.00
1901	1.25	1.00
1902	1.15	1.00
1903	1.00	1.00
1904	.90	.75
1905	.90	.75
1906	.75	.75

1909—
Light and fuel, $.75; all over 50,000 cu. ft., $.50
House heating, any quantity, $.50
Minimum bills, $.25 per month

WATER

1898	$.30	per 100 cu. ft
1901	.25	per 100 cu. ft.
1907	.17½	per 100 cu. ft.

1913—
8,000 cu. ft. at $.17½ per 100 cu. ft.
8,000 cu. ft. at $.10 per 100 cu. ft.
60,000 cu. ft. at $.07½ per 100 cu. ft.
100,000 cu. ft. at $.05 per 100 cu. ft.
All over at $.02½ per 100 cu. ft.

1914—
10,000 cu. ft. at $.15 per 100 cu. ft.
10,000 cu. ft. at $.12 per 100 cu. ft.
All over at $.08 per 100 cu. ft.
Minimum bills, $.50 per month

No rates for either gas or water have been changed since January 1, 1914. While the era of high prices has swept over the entire world during and since the war and has increased the salary of every employee of the department below that of the manager, some of them being doubled, has more than doubled the cost of cast iron pipe and of pig iron, has increased the price of coal for making gas and operating its pumping stations, has increased the cost of electrical energy, still the price of gas and water has remained the same without a single change of any kind for the past eight years. Further than this, the profits of the department were never higher in any previous year than for 1920, and for the combined plants were $174,381.41. And still further, there is not another place, town or city, anywhere in North America, so far as the writer has been able to discover, where manufactured gas is sold for 50 cents or 75 cents. If there is, the writer will be grateful to anyone that will furnish him the information.

Policies That Have Brought Success

Experience develops policies. Policies are subject to the law of the "survival of the fittest." The policies that survive gradually become so established that, although unwritten, they become law; for instance, in these plants:

1. All charges are based upon cost.
2. No material service is ever rendered free of charge.
3. No price is ever cut to retain a customer, or for any other reason except to correct an error.
4. All customers pay the same price for the same service.
5. No charity is ever extended, except when the recipient bears a certificate from the clerk of the Poor Board.
6. Every complaint is given the utmost consideration and courtesy.
7. No charge is ever based upon what the traffic will bear.

As to financial matters:

The Division of Public Utilities has its separate fund, which is not mixed up in any way with other city funds.

All revenue derived from the sale of gas and water is turned into this fund.

All interest charges and bonds retired are paid for from this fund, as well as all payrolls, construction accounts, and other items of expense in the operation of the plant.

Extensions and betterments are paid for, as far as may be practicable, from the current earnings.

Bonded indebtedness is reduced as rapidly as possible.

Covering the personnel are the following:

All permanent employees are under civil service rules, and no applicant can be placed on the eligible list until he or she has passed the required examination.

All vacancies are filled by promotion from lower ranks, when practicable.

Selections for higher positions are made on the basis of past efficiency.

For misdemeanors or inadequacy of service, the penalty is suspension without pay.

Again let it be said, do not grant special privileges to anyone and do not ask for any for yourself or for the plant which you are trying to manage. The largest and most destructive argument that has ever been leveled against public ownership is that the plant is self-supporting because it enjoys the special privilege of exemption from taxation. The director of the Taxpayers League was surprised when we told him that we were perfectly willing to pay taxes on exactly the same basis as any other utility, but that we wanted the Taxpayers League to see that we received full pay for the hydrant

service. With this argument settled, there remains only one other shot that they can fire, and that is that we enjoy exemption from the payment of cash dividends on the money invested. In our case this would be, say, 8 per cent on $1,445,000, or about $115,600 a year. This amount would take quite a slice from our net earnings, but to whom would we pay the dividends? To our customers, of course, for they are the ones who have invested their money in the plant. But why tax these same customers in order to pay back to them dividends which can be paid just as well in reduced rates, and which *are* being paid in reduced rates, and which, as they gradually come to own the entire plant, free from all debt, they will receive as maximum cash dividends in reduced rates every time they pay a water or a gas bill?

The public ownership of this plant has had a most wholesome and steadying effect upon other utilities privately owned. Seven years ago the electric light plant had either to turn its plant over to public ownership or to reduce its rates. On an appeal to the voters, it chose the latter, and the people voted against purchase by the city. It has not asked nor tried to raise its rates during or since the war. The Street Railway Company is still operating on a 5-cent fare.

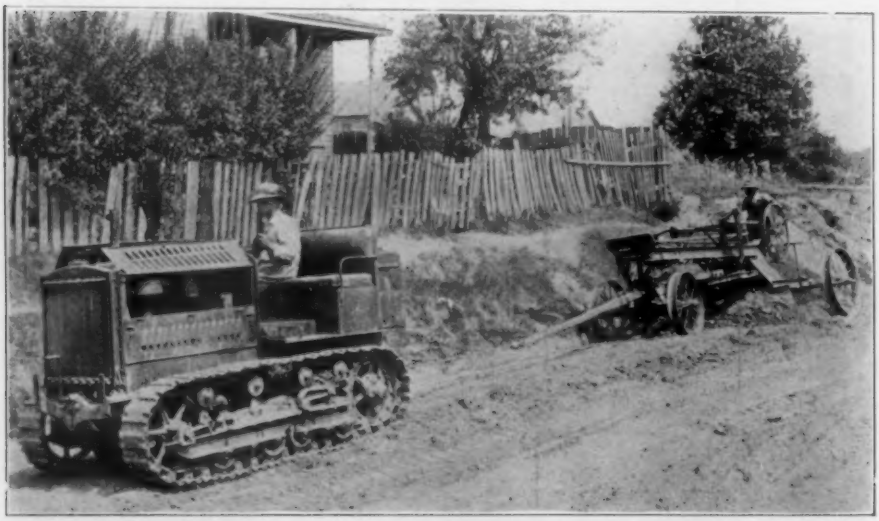
ACKNOWLEDGMENT.—From a paper read before the Public Ownership League of America, in Chicago, Ill., in November, 1921.

The Health of City-Dwellers Demands Shaded Open Spaces

THE COMING OF HOT WEATHER REMINDS CITIZENS OF THE DEBT THEY OWE TO THOSE WHOSE FORETHOUGHT PROVIDED THEM WITH SUCH PARKS AS THE ONE SHOWN ABOVE

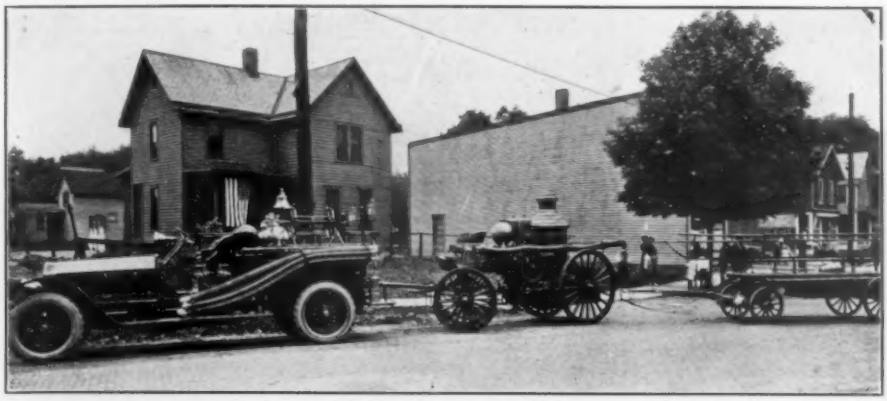
Progressive American Cities Use Motor Equipment in Many Departments

"SOUTH BEND" SPRINKLING OUTFIT ON FEDERAL TRUCK, IN THREE RIVERS, QUEBEC

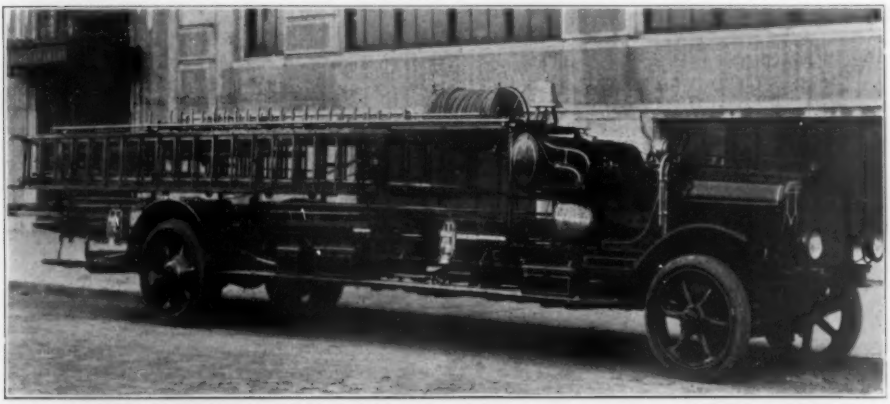


THE CITY OF MEMPHIS, TENN., USES THIS OUTFIT FOR ROAD WORK WITHIN CITY LIMITS

The 5-ton Holt tractor was sold by the Halloran-McLean Tractor Company, Inc., Memphis, Tenn. The grader is a Stockland Special Quick-Lift machine with 8-foot blade

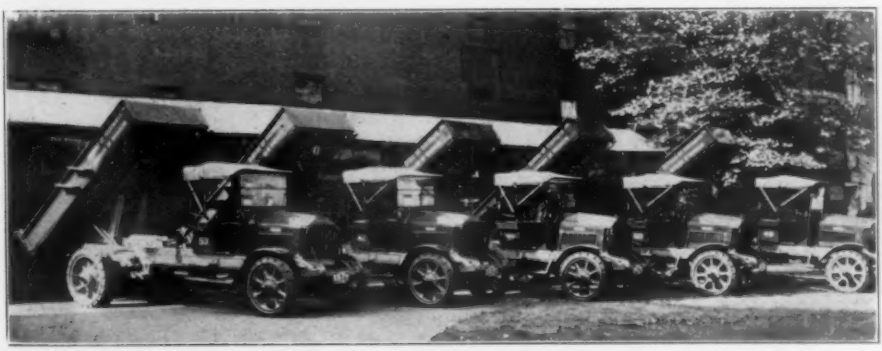


THREE AGES OF FIRE FIGHTERS EXHIBITED BY THE AMERICAN-LAFRANCE FIRE ENGINE COMPANY AT THE ELMIRA CONFERENCE OF NEW YORK STATE MAYORS AND OTHER MUNICIPAL OFFICIALS



ONE OF NEW YORK CITY'S NEW FLEET OF TEN 5-TON CITY SERVICE TRUCKS

These White trucks have a 245-inch wheel-base and are equipped with 50-horse-power motors. The ladder equipment, supplied by Peter Pirsch, includes one 55-foot ladder, one each 40-, 30-, 25- and 18-foot ladders, and one 16-foot extension ladder. The trucks also carry a 40-gallon chemical tank and 200 feet of ¾-inch chemical hose



A GROUP OF DUMP BODY MACCARS USED BY THE DEPARTMENT OF HIGHWAYS, BOROUGH OF BROOKLYN, NEW YORK CITY

Transforming an Old Waterway Into a Roadway

Utica Replaces the Erie Canal with a New Street

By Charles Martel Niles

TIME brings inevitable changes. The mechanical marvel of to-day may be on the scrap-heap to-morrow. Therefore, it is not surprising that the Erie Canal in the city of Utica, N. Y., is to be abandoned after a century of service. When the original canal was thrown open to traffic a hundred years ago, the people of Utica celebrated the occasion with great rejoicing, rightly believing that the canal would be of enormous commercial benefit to them. Now they are equally enthusiastic over the elimination of the canal in the interest of Twentieth Century progress.

GRADING PREPARATORY TO REMOVING HIGHWAY BRIDGE WITHOUT INTERRUPTING TRAFFIC

Flowing from west to east, the old Erie Canal practically bisected the business section of the city. It was the only means of water transportation that the city possessed until the opening of the new Barge Canal. In the course of time the banks of the old canal became lined with warehouses and manufacturing plants. Long after the advent of the railroads it continued to play an important part in the commercial affairs of the city.

Under Twentieth Century conditions the usefulness of the canal began to wane. Its benefits were more than offset by its many disadvantages. Lift bridges, with their concomitant delay and expense, had to be maintained on all the principal streets in the center of the city. Elsewhere there were many elevated spans with high approaches, which produced an equally undesirable situation.

With the opening of the Barge Canal in 1917, the situation suddenly became acute. The Barge Canal took part of the water which had previously supplied the Erie Canal and there was not enough water left to maintain the level required for navigation in the older waterway. Careless people used the canal channel as a dumping-place for every imaginable kind of refuse. The old bridges were unsafe for heavy motor trucks; in fact, trucks broke through the flooring on several occasions.

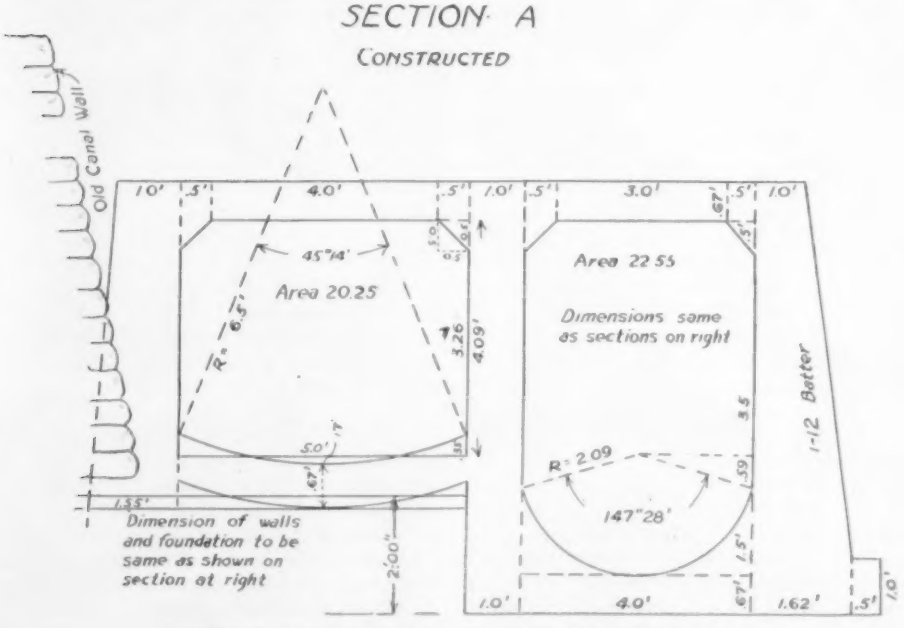
By the referendum adopted at the general election in 1918, the city obtained the right to close the canal between Schuyler Street

and Third Avenue, a distance of about three-quarters of a mile, providing a conduit were constructed to maintain the flow of water in the remaining portions of the canal.

With all the legal obstacles cleared away at last, plans were formulated for the construction work necessary to the elimination of the old canal. It was decided to begin by building 1,100 feet of reinforced concrete conduit, which would permit the closing of the canal in the busiest part of the city and the removal of three particularly objectionable bridges. The conduit was designed to have a gradient of .045, giving a capacity of 90 second-feet, which was deemed sufficient to maintain the water-level in the canal east of the fill. The conduit follows the north side of the old canal-bed close to the former tow-path.

The conduit has a peculiar cross-section. It consists of two covered channels of nearly equal carrying capacity, but different shapes. The channel nearest the canal bank is 5 feet in width and 4 feet deep, with a slightly curved invert. The southerly channel is 4 feet wide and 6 feet deep and has a semi-circular bottom. The tops of both channels are at the same elevation, so the invert of the deeper one is 2 feet lower than the other. This type of construction was adopted so that the deeper channel may be converted into an intercepting sewer if at some future time the canal should be entirely closed. It would be used for sanitary sewage only and would be extended to a contemplated sewage disposal plant east of the city.

The conduit was built with city forces, as that was considered the most economical method under existing conditions. The old tow-path provided an ideal location for the portable concrete mixer, and a ready route for bringing up the aggregate. The elevation of the tow-path was sufficient to permit the product of the mixer to be chuted directly into the forms. Collapsible wooden forms in 10-foot sections were designed and built especially for the job. The conduit rests on an 8-inch bed of concrete. The partition wall between the channels is 1 foot thick; the outer walls are a foot through at the top and have a batter which makes them about 18 inches wide at the base. The top is 8 inches thick. Top and sides are reinforced with heavy expanded metal. The job required about 2,200 cubic yards of concrete.



ELEVATION SHOWING METHOD OF BUILDING DUAL CONDUIT

Some of the Difficulties

On account of the unusual weather which prevailed during the winter of 1920-21, the conduit construction was alternately menaced by frost and flood. Zero temperatures alternated with thaws, resulting in frequent floods, which several times threatened serious damage to the work. A temporary dam was built across the canal channel at each end of the conduit site. Pumps were installed at the lower end of the conduit to keep the work properly drained. On one occasion when high water seriously menaced the partly completed conduit, reserve fire engines were used to help pump out the pit. In freezing weather the sand, stone and water were heated and the finished concrete was protected with a layer of earth or straw.

As the construction of the conduit progressed, the filling of the old canal channel followed closely. A large amount of ashes and trash collected about the city was used for filling; also cinders from boiler plants. In this way the expense of making the fill, which contained about 22,000 yards, was comparatively small. A top dressing of clean earth was placed on the fill. Jay Street, which formerly met the canal at an acute angle and ended there, will eventually be extended along the new fill to Hotel Street. This will provide a new cross-town thoroughfare, which will help to relieve traffic congestion in the busiest part of the city.

The conduit was first built under the three bridges to be removed, and the intervening portions were then constructed. The filling was brought up close to the floor of the bridges before the planking was removed. Then all superstructure was razed, the whole work being accomplished with practically no interruption of traffic. The old, unsafe bridges at Hotel and John Streets were removed first. The material in the bridges reverted to the state under the provisions of the special act.

Removing "the Hump"

The removal of the bridge at Genesee Street, the principal business artery of the city, presented a peculiar problem. It was in reality three bridges in one. The central part of the bridge was a high truss span with its floor raised about 7 feet above the grade of the street. It had long elevated approaches and carried a double-track trolley line. This structure was locally known as "the hump," and its elimination was one of the main objectives of the entire job. At each side of the trolley bridge were heavy plate girder spans at the street grade. These were lifted by pneumatic pressure when the canal was in use.

The east lift was removed first, and temporary trolley tracks were laid on the fill. Then vehicular traffic was routed over the trolley bridge while the west lift was being taken away. The heavy plate girders were moved intact through the city streets a mile to the Barge Canal harbor, whence they will be taken and used elsewhere by the state. Finally, the high bridge and its approaches were razed and the trolley tracks relocated in their permanent position. The entire street for a distance of 600 feet will be regraded and newly paved as soon as the fill has safely settled.

Thus, after a twelve years' fight for civic betterment, this splendid improvement is now nearing completion. The expense has been met by the issuance of bonds. The cost of the entire job, including conduit construction, filling, removal of bridges and paving, will be approximately $150,000. This expenditure will be many times repaid by the economic and esthetic improvement to the business section of the city; in fact, the entire community will be immensely benefited.

Road Accidents Minimized in Maryland

The Highway Commission of Maryland, which received $1,600,000 for highway maintenance and construction in 1921, adopted the policy that in addition to the ordinary maintenance, special attention should be given and money expended to eliminate danger points on the roads and thus reduce accidents to a minimum. With this in view, a system was worked out whereby every accident on the state road system is reported daily and is represented by a colored tack on a large map in the office of the Chief Engineer. An intelligent study of this map shows the points or sections of road that need immediate attention.—*Highway News Digest.*

Chamber of Commerce Activities in Public Affairs

Successful Campaign for City Water Plant

STEVENS POINT, WIS.—Two water questions submitted to voters of the city at a special election held Wednesday, February 8, were carried by overwhelming majorities of more than 9 to 1. Municipal ownership of the local water utility, as well as the development of a new source of supply, is now a certainty as a result of the election.

The two questions submitted to the voters were:

(1) The purchase of the plant of the Stevens Point Water Company for the sum of $175,000 plus the actual cost of the construction of mains in the streets since June 1, 1921; and (2) providing for the issuance of bonds in the sum of $100,000 for the construction of a pumping station in the Plover River basin. The strength of the supporting votes and the weakness of the opposition proved the only surprise of the election. While it was generally predicted that both questions would win, even those who were most confident looked for a vote less decisive. In every ward both questions voted upon carried by heavy majorities, and the victory is considered a clear-cut expression of just how strongly the people of the city feel the need of a good water-supply.

About six years ago, the voters had an opportunity of expressing their desire for the purchase of the Stevens Point Water Company's plant, but the issue was defeated by 10 to 7, and the matter was allowed to drift along until the Chamber of Commerce undertook to revive the issue.

The Board of Directors of the Chamber felt that before the question of purchase be again voted upon, steps should be taken towards locating and developing a new source of supply of pure, wholesome water, and after much labor persuaded the City Council to appropriate a sum of money sufficient to retain the services of a hydraulic engineer. This was done, and W. G. Kirchoffer of Madison was engaged. After the usual preliminary surveys, he advised the Council, through the Chamber, that he had located a supply of spring water in quantities sufficient to serve a large city. The Council then voted a sum of money with which to purchase the 40-acre tract of land upon which the springs were located; options were secured from the owners of the present water-works company, and at the election of February 8 the citizens indicated by their vote that they had had enough bad water and were in favor of purchasing the present plant, developing the new supply and making this utility a municipal one.

F. LESLIE BODY,
Secretary, Stevens Point Chamber of Commerce.

How One City Fosters Respect for Citizenship

LOGAN, UTAH.—Birth, marriage and death—we are told that these are the three noteworthy events in any one's life. But the city of Logan has added a fourth—when young men and young women attain the dignity of citizenship they are publicly banqueted in honor of the event.

On the last day of January of this year, nearly 150 of the young people of Logan who had attained their majority were entertained by the city, the Logan Chamber of Commerce, and other civic organizations in the first of what promises to be an annual celebration. While other communities have seen fit so to honor their naturalized citizens, Logan is the first city to show this consideration to its own sons and daughters who have gained the right to vote.

The whole affair was planned to give the young voters a proper respect for the ballot, to show them that along with the privileges of citizenship go many responsibilities, to teach them some of the principles upon which their government stands—in short,

Concrete Pavement, Troy, N. Y. Hard-n-tyte Road Treatment used.

Do you realize what 30% longer life means on the concrete roads you build?

Read this book and find out!

Just think of it! Concrete that stands the crunching grind of traffic 30% better! Concrete that stands up 30% longer under the constant gnawing of the elements! The ability to give the taxpayers a road like that adds something to a man's reputation.

But that isn't all. Hard-n-tyte reduces the problem of maintenance to almost nothing. When Hard-n-tyte goes on a concrete road, your worries about soft spots, ruts or crumbling stop! The weather-proof silicates and fluorides formed by flushing the Hard-n-tyte solution over the road, produce a flint-hard surface that will stand up under the hardest kind of traffic for many years to come.

But all the things you want to know about lengthening the life of concrete can't be told here, so send in the coupon below for your copy of the booklet, "Hard-n-tyte Highways." Send for it today—it tells the whole story.

General Chemical Company
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Hard-n-tyte Road Treatment

—makes concrete roads wear longer

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Please send me a copy of "Hard-n-tyte Highways."

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Mail this Coupon to us NOW!

For over twenty years the General Chemical Company has been at the forefront of chemical research and manufacture in this country. Hard-n-tyte is the latest contribution of its splendid staff of chemists. It is the successful result of long search for a concrete hardener that really hardens the surface and materially increases its life. It enables engineers and contractors to deliver a quality of concrete work far in advance of anything that has been possible heretofore.

A BANQUET WAS GIVEN TO THE NEW CITIZENS OF LOGAN, UTAH

to make of them better Americans. As one citizen expressed it:

"When I attained the right to vote, I knew nothing of the sacred duties this right entailed. It had cost me nothing and was, as far as I could tell, worth nothing. Only after years of experience did I begin to realize that I held in my hands one of the most sacred political rights which it is given man to possess. I believe that, if we can bring our young citizens to an early realization of the power and sacredness of the ballot, we have done much to elevate the ideals of democracy."

Logan's first "New Citizens Night" was admirably planned. At six o'clock on the evening of January 31, the young people sat down to a banquet. Representatives from various organizations in the city were placed among the young people to aid in their entertainment. Songs and stunts enlivened the affair and put all in the right mood for the more serious toasts of the evening. A number of citizens, in costume, took the parts of immigrants from various countries and, during the course of the banquet, criticized severely the institutions of our government, only to be answered in vigorous speech by the young citizens. A local attorney, responding to the toast, "The Vote," told of the privileges and responsibilities that go with citizenship. A local club woman, in toasting "The Future Woman," outlined the duties that the woman of to-morrow must hold sacred.

Following the banquet, a great public meeting was held, at which the new citizens were special guests. After the singing of patriotic songs, Chief Justice Frick of the Utah Supreme Court explained the fundamental principles of American democracy and showed that a clear understanding of the government of the United States comes from a mastery of the truths in the Declaration of Independence."

D. E. ROBINSON,
Agricultural College of Utah.

Chamber Promotes Model Market-House

LEXINGTON, KY.—"Not a morsel of food for a fly to light upon" is the slogan and the achievement of Lexington, Ky., in the construction of a modern market-house that spells the last word in science and sanitation so far as consolidated markets are concerned.

The building is a model of compactness, convenience and completeness, and is well worth the study of any community interested in modern methods of food merchandizing and in making its market an asset instead of an eyesore to the city. Lexington claims to have in its new market-house features that are not to be found in any other municipality and that represent the latest and best methods of handling and retailing food products.

Before tenants are permitted to take over the stalls, all fixtures are set up, including cash registers and scales, and are uniform throughout. Sealed glass cases, of newest type, are used for holding and displaying perishable wares. The entire basement is given over to the operation of a refrigerating plant and dry storage, with individual spaces for each tenant of the building. Cleanliness marks the handling of food products from the time they are placed in the refrigerator until they reach the customer in his or her home.

The main floor, with its booths for groceries, meats, vegetables, drugs, soda, coffee, fruits and flowers, maintains a system for serving all the household needs of the customer in the shortest time possible. All deliveries are made through a central automobile delivery service, and a central telephone switchboard directs a cooperative service of taking and filling orders. A comfortable rest room, with writing and telephone facilities, is provided on the mezzanine floor, overlooking the quiet, cleanly scene of efficient marketing service going on below.

The project originated in the Lexington Board of Commerce and was worked out under the direction of Dyer J. Lockwood and an engineering corporation experienced in such work, after studying the plans, de-

Beauty and Efficiency
HOLLAND, Michigan, was the first to decorate their streets with this wonderful French design lighting standard created by the General Electric Company and manufactured by the King Manufacturing Company.
King Manufacturing Co.
53 West Jackson Blvd.
CHICAGO ILLINOIS
KING
WHITE WAY POSTS

fects and possibilities for development of similar enterprises in other cities throughout the country.

C. F. DUNN,
Secretary-Manager, Board of Commerce.

A New Hospital for Keene, N. H.

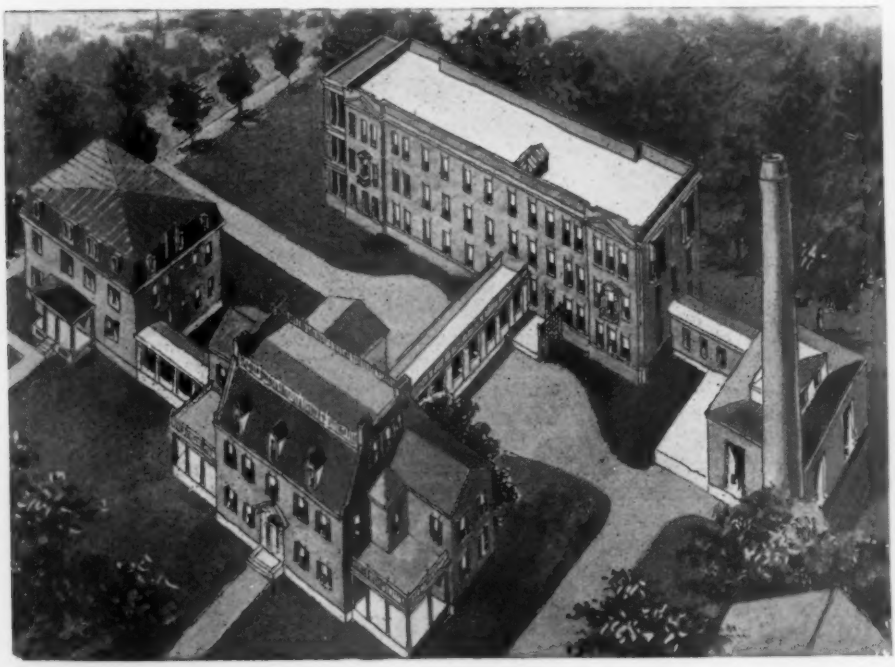
KEENE, N. H.—For many years the local hospital facilities of Keene had been inadequate. In December, 1920, the Chamber's Committee on Activities, through a questionnaire, showed the community to be united in realizing the need of a new hospital. Backed by this sentiment, a committee from the Chamber of Commerce, the Board of Trustees, and the Board of Health met, and through their efforts a new Board of Trustees was elected, which was ready to carry out a program to build a hospital. By newspaper publicity, bulletins, and various other means, the need of a hospital was brought prominently before the people, who were ready to support the new Board of Trustees in this undertaking.

The organization for the drive, which resulted in raising $275,000 for a new hospital, was as follows: the Executive Committee, composed of representatives from the chief organizations in the city; four joint chairmen—two men and two women; twenty-four teams in the city, of eleven members each, and one in each of the towns in the county. At the head was a professional organizer, brought into the city for the purpose of giving all his time to the campaign. The actual campaign required seven weeks, only ten days of which were consumed in actual solicitation. The campaign had all the characteristics of an intensive war drive and was entirely successful. Not only was there $50,000 over-subscription, but the community spirit was the best that we have yet seen.

PRICE GAINES,
Secretary, Keene Chamber of Commerce.

Volunteer Labor Rebuilds Highway

CANON CITY, COLO.—Colorado roads suffered heavily the past season from heavy rains and floods. The county and state appropriations could not take care of the expense of restoring them to normal condition. The citizens of Canon City had al-



THROUGH THE EFFORTS OF THE CHAMBER OF COMMERCE $275,000 WAS RAISED TO BUILD THIS HOSPITAL AT KEENE, N. H.

Broadway High School Annex,
Seattle, Washington.
F. A. Naramore, Architect
ALUNDUM SAFETY TILE USED ON ALL INTERIOR STAIRS.

MODERN SCHOOL PRACTICE REQUIRES SLIP-PROOF CONSTRUCTION

Making stairs and hallways safe for careless children has been a big problem. Stairways, ramps, floors and walks must and can be made safe for flying feet, even in wet weather.

ALUNDUM SAFETY TILE will prevent the slips and falls that invariably occur on ordinary surfaces. School buildings throughout the country are being equipped with this slip-proof, indestructible tread on steps and floors of every kind. Made in different colors and used either alone or in combination with other tiles to produce a slip-proof surface.

It never wears smooth and will last as long as the building. It is economical. Data for architects and other information may be obtained on request.

NORTON COMPANY
WORCESTER, MASS.

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New York

11 N. Jefferson Street
Chicago

233 W. Congress Street
Detroit

T37

ready demonstrated that roads could be constructed by volunteer labor, having built over two miles of mountain road to open up a new scenic attraction and rebuilt the Royal Gorge road three different times.

The beautiful Phantom Canon highway was rendered impassable by floods. This road covers a distance of 32 miles, extending between Canon City and Florence to Victor and Cripple Creek. It looked like a hopeless task to restore the road to travel. State engineers made estimates of $90,000 to rebuild. The indomitable local spirit prevailed, and the citizens of Florence made up their minds that this scenic highway must be restored. They set the ball rolling. The first day's call resulted in a response from 150 men of all classes. They followed this up for four days with from 50 to 60 men each day. The progress was amazingly fast. The cooperation of Canon City, Victor, Cripple Creek and Penrose was then requested, with the result that each day saw from 75 to 150 men working like Trojans. By the end of the second week this magnificent highway was again open to travel. Another view of the highway appears on the cover of this issue of THE AMERICAN CITY.

E. A. BRADLEY,
Secretary, The Chamber of Commerce.

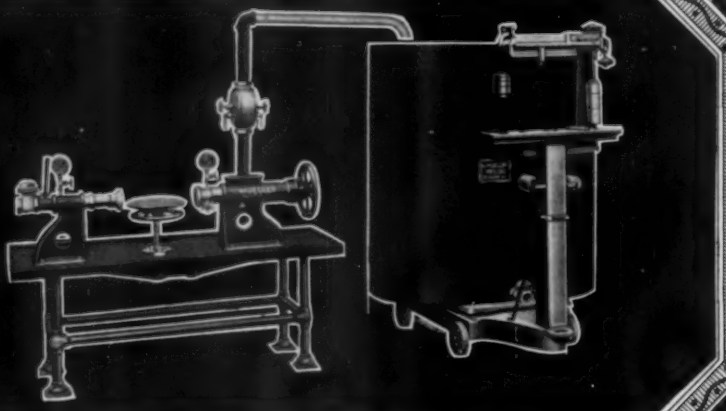
RUGGED COUNTRY FOR ROAD BUILDING
But citizens of Florence, Canon City, Victor, Cripple Creek, and Penrose, Colo., put the road through

Fire Prevention Propaganda in Newark Schools

NEWARK, N. J.—To gain temporary possession of the silver cup shown in the accompanying picture, pupils of the South Market Street Grammar School of Newark, N. J., submitted 208 essays in connection with the observance of Fire Prevention Day last year. The prize was offered by the Insurance Section of the Newark Chamber of Commerce to the school sending in the largest number of compositions on "Home Inspection to Prevent Fires." The cup will be contested for annually, and permanent possession will be attained only upon three successive awards of the prize. Inscribed on the cup, leaving space for future inscriptions, is the following:

"Fire Prevention Day—October 9th, 1921—School

THE PRIZE OF THE FIRE PREVENTION ESSAY CONTEST OF NEWARK, N. J.



Mueller Water Meter Testers

Experienced Water Works men test new meters before they are installed. It's important to know that the meters are correct—because they measure the volume of water passing through to the consumer. *They tell how much the consumer uses.*

Testing a meter with the *MUELLER* is as easy and simple as telling time. After a certain amount of water is passed through the meter, a weight on the per cent bar of Tester is balanced and gives a correct reading of per cent of error, either over or under the normal or correct figure.

No company furnishing metered water can afford to be without a *MUELLER* Tester. A few large meters under-registering will lose more money for the company in a year than the cost of a *MUELLER* Water Meter Tester.

Detailed descriptions and prices on request.

H. MUELLER MFG. CO., DECATUR, ILL.

PHONE BELL 153

Water, Plumbing and Gas Brass Goods and Tools.

New York City, 145 W. 30th St., Phone Watkins 5397

San Francisco, 635 Mission St., Phone Sutter 3577

Sarnia, Ontario, Canada

Mueller Metals Co., Port Huron, Mich., Makers of "Red Tip" Brass Rod; Brass and Copper Tubing; Forgings and Castings in Brass, Bronze and Aluminum; Die Castings in White Metal and Aluminum; also Screw Machined Products.

Prize—Annual Competition—Fire Prevention Competition—Permanent Possession with Three Successive Awards—Awarded by the Fire Insurance Section of the Chamber of Commerce of Newark, N. J., to the South Market Street School for submitting the largest number of competitions in 1921 Contest."

Three other cups were given as individual prizes for the best compositions submitted.

The essay contest was inaugurated last year and was conducted with the cooperation of the municipal Bureau of Combustibles and Fire Risks and the Superintendent of Schools. It was confined to the grammar schools, with the idea that the pupils of this grade would be more impressed with the purposes of the competition. There were 515 compositions submitted. It is confidently expected that this number will be vastly increased in the succeeding years of the contest.

E. W. WOLLMUTH,
Secretary, Chamber of Commerce.

San Francisco Chamber Will Offer Unique Service to City's Guests

SAN FRANCISCO, CALIF.—In line with the new program adopted by the San Francisco Chamber of Commerce, it is proposed to make this city known as the most hospitable city in the world; the idea is that the visiting guest or tourist is a potential asset if properly received. Hence, the Program Committee and the Chamber of Commerce have organized, under the leadership of Dr. B. M. Rastall, industrial engineer, for the purpose of extending the hospitality of the city to every visitor. It is planned to see that no one is permitted to go away without having received special courtesy and also an adequate and definite knowledge of the city's resources and advantages. So far this is the only American city to organize itself definitely for this purpose.

It is planned that every incoming steamship and transcontinental train shall be met by an authorized agent of the Hospitality Committee; that hotels and every recognized resource of the city shall cooperate to make San Francisco known as "The City of Hospitality." The visitor will be greeted on his arrival, and an effort will be made to find out his probable destination and to get any information which the vistor desires to give. This information is then sent by special messenger to the Hospitality Committee headquarters and filed, the vistor is assigned to his particular host, and the effort is started to make his visit one of profit or pleasure. As far as possible and practical, each visitor will be assigned to a host who is in his own line of endeavor.

The organization for this task is very definite and makes the entire scheme simple—not a burden on any one. Five thousand citizens have been asked to volunteer their services as hosts to the tourist or business visitors for three half-days each year; no one is asked to go beyond what he can afford to do, or to entertain in an elaborate way. He is asked to call on the visitor who is assigned him, extend the welcome of the city, and offer such suggestions as to the city's resources and points of interest as may seem advisable, with perhaps a tour of the city by automobile, or a luncheon. In fact, it becomes his business to see that his particular guest shall have the right knowledge of San Francisco, and shall leave it feeling that he has been really welcomed and that his particular mission (be it business or pleasure) has been definitely aided by the Chamber's representative.

Each host knows in advance just the particular half-day which he is expected to devote to this entertaining; thus the burden on him is minimized and the possibility is eliminated of a guest's arrival without a host to receive and entertain him. Nor is

To SAN FRANCISCO CHAMBER OF COMMERCE

.....192..

SAN FRANCISCO HOSPITALITY

I volunteer my services for THREE HALF DAYS during the coming year to the SAN FRANCISCO HOSPITALITY COMMITTEE. Upon advance notice by the committee I will hold definite dates exclusively for assisting and entertaining such guests as are assigned to me.

Name .....

ONE SIDE OF THE CARD FILLED OUT BY VOLUNTEERS FOR THE SAN FRANCISCO HOSPITALITY COMMITTEE

MILEAGE

JUST how many thousand miles Osborn Push Brooms cover each day is impossible to estimate and it's of no importance—but it's a sure fact that they are in daily use in over 500 cities in the United States.

The present day development of our brush and broom business is the result of over 30 years experience. This wide experience, coupled with the findings of our Engineering Department and the tests of our Experimental Laboratory has naturally resulted in an ability to make brooms and brushes give unusual service.

An inquiry will bring, by return mail, prices and any further information wanted.

THE OSBORN MFG. CO.
INCORPORATED

New York CLEVELAND Detroit
Chicago San Francisco

OSBORN

BRUSHES BROOMS

LARGEST MANUFACTURERS *of* INDUSTRIAL BRUSHES AND BROOMS

this service to be pushed to the place where the visitor is wearied.

If the visitor be one of prominence, committees will give special attention, and telephone and telegraph plans will be made for his pleasure and comfort. Many of the definite details of his entertainment will be left to the individual judgment of the host to whom he is assigned.

Naturally, for the first months the details of this plan for promoting the city's advancement will be in the making and will be changed as conditions may require; but there is little doubt that the opportunity offered by this movement will give San Francisco a unique position among American cities.

CHARLES A. SIMMONS,
Executive Secretary, San Francisco Chamber of Commerce.

Removes Advertising Signs from Street Poles

New Orleans, La.—One of the problems the Civic Bureau of the New Orleans Association of Commerce has had to face in giving the city streets a cleaner appearance is the prohibition of promiscuous tacking and placing of signs on the posts along the streets. Efforts, extending over a period of more than a year, have proved successful, however, and although at times signs are still strung to posts, the cases are very scarce—in fact, almost negligible.

It was a hard fight to convince the police and city officials that the committee was right. They were reluctant to give up the chance of playing politics by allowing campaigns, with more or less merit, to use the streets for advertising purposes. The committee, however, with the law on its side asked only that the municipal ordinances be enforced. Violators were called to the attention of the police, and in several cases the signs were removed by the police before being put in place. Several firms that used the posts to advertise their private businesses were asked to stop the practice and have their signs removed, and, seeing the wisdom of the request, complied with it.

Throughout the whole period of the work, the local railway company and the telephone and telegraph company, owners of the posts along the streets, have cooperated with the committee. They have had old signs removed and have refused to allow anyone to tack or hang any advertisements on their posts.

A. K. SCHARFF,
Secretary, Civic Bureau, New Orleans Association of Commerce.

On the Calendar of Conventions

April 19-21.—Spartanburg, S. C.
Tri-State Water and Light Association of The Carolinas and Georgia. Annual meeting. Secretary, W. F. Stieglitz, Columbia, S. C.

May 1-4.—Nashville, Tenn.
Southern Commercial Secretaries Association. Annual convention. Secretary, Roger Miller, Macon, Ga.

May 3-6.—Detroit, Mich.
American Physical Education Association. Annual convention. Secretary, Dr. J. H. McCurdy, 93 Westford Avenue, Springfield, Mass.

May 9-11.—Atlantic City, N. J.
National Fire Protection Association. Annual meeting. Secretary, Franklin H. Wentworth, 87 Milk Street, Boston, Mass.

May 12.—New York, N. Y.
National Highway Traffic Association. Annual meeting. Secretary, Elmer Thompson, 247 West 54th Street, New York, N. Y.

May 15-19.—Philadelphia, Pa.
American Water Works Association. Annual convention. Secretary, J. M. Diven, 153 West 71st Street, New York, N. Y.

May 15-19.—Atlantic City, N. J.
National Electric Light Association. Annual convention. Executive manager, M. H. Aylesworth, 29 West 39th Street, New York, N. Y.

May 15-21.—Washington, D. C.
Chamber of Commerce of the United States of America. Annual meeting. Secretary, D. A. Skinner, Mills Building, Washington, D. C.

May 17-18.—Waxahachie, Tex.
League of Texas Municipalities. Annual convention. Secretary, Frank M. Stewart, Government Research Division, Bureau of Extension, University of Texas, Austin, Tex.

June 5-7.—Springfield, Mass.
National Conference on City Planning. Annual conference. Secretary, Flavel Shurtleff, 60 State Street, Boston, Mass.

June 6-7.—Antigo, Wis.
Wisconsin Association of Commercial Secretaries. Annual meeting. Secretary, D. A. Caldwell, Chamber of Commerce, Wausau, Wis.

June 6-9.—St. John, N. B.
National Public Health Congress. Annual meeting. General Secretary, Dr. R. D. Defries, 206 Bloor Street, Toronto, Ont.

June 6-10.—Swampscott, Mass.
New England Association of Commercial Executives. Annual meeting. Secretary, Charles E. Smith, Chamber of Commerce, Woonsocket, R. I.

June 13-17.—Victoria, B. C.
Canadian Good Roads Association. Annual convention. Secretary, George A. McNamee, 909 New Birks Building, Montreal, Quebec.

June 20-23.—Colorado Springs, Colo.
National Association of Comptrollers and Accounting Officers. Annual convention. Secretary, Mark M. Foote, Comptroller's Office, Chicago, Ill.

June 22-29.—Providence, R. I.
National Conference of Social Work. Annual meeting. General Secretary, William H. Parker, 25 East 9th Street, Cincinnati, Ohio.

June 26-July 1.—Detroit, Mich.
American Library Association. Annual convention. Executive Secretary, Carl H. Milam, 78 East Washington Street, Chicago, Ill.

July 8-16.—London, England.
English Federation of Settlements. International Conference.

August 15-18.—San Francisco, Calif.
International Association of Fire Engineers. Annual meeting. James J. Mulcahey, City Hall, Yonkers, N. Y.

October 9-13.—Cleveland, Ohio.
American Society for Municipal Improvements. Annual convention. Secretary, Charles Carroll Brown, P. O. Box 234, St. Petersburg, Fla.

HOLLOWSPUN

Lighting Standards

FOND DU LAC, Wisconsin, has installed HOLLOWSPUN reinforced concrete lighting standards, both for park lighting and for business streets. Our new catalog supplement No. 9 contains full information on this and other types of HOLLOWSPUN standards.

A copy will be sent on request.

Massey Concrete Products Corporation
Peoples Gas Building, Chicago.

The Baldwin-Fairmount Filtration Plant and Pumping Station in Cleveland

Additions to Extensive Water-Works System Have Many Interesting Features

BEFORE the water-works was started and while Cleveland was still a small village, water was obtained from springs and wells. There were one or two good springs, but most of the water was hard, so that water for washing purposes was hauled up the hill from the river in barrels and wagons.

In 1854 work was started on the first pumping station, drawing its water from Lake Erie. In September, 1856, water was pumped into the mains, an event which was the cause of much jollification and celebration. The pumping equipment consisted of two Cornish beam engines and six boilers. The inlet was a pipe made of boiler plate 50 inches in diameter, extending 300 feet from shore and 400 feet west of the western terminus of the old river-bed and into 12 feet of water. The distribution system in 1857 consisted of 13 miles of water-main and one reservoir of 6,000,000 gallons capacity. In 1920 the distribution system had increased to 1,452 miles of pipe and four reservoirs with a combined capacity of about 157 million gallons. The average daily pumpage in 1857 was 348,700 gallons, and in 1920, 140,337,000 gallons.

The record shows that the number of connections with meters in 1874 was 1.28 per cent of the total number of connections. This percentage gradually increased, until in 1901 it was 6.42 per cent. In 1902 the policy of metering all connections was inaugurated, so that by the end of the year 19.88 per cent of the services were metered. This policy was steadily followed, and in 1909 practically 100 per cent of the entire supply was measured through meters.

MODEL OF GROUNDS OF BALDWIN FILTRATION PLANT AND RESERVOIR, PREPARED FROM LANDSCAPE ARCHITECTS' PLANS

The New Facilities

The program for the future development

Expert Engineering Advice

on all Playground Installations

The Medart Plan and Engineering Department is constantly adding to its 50 years of accumulated experience by devising and planning playgrounds so that the greatest good will follow through their use. Add to this an honest effort to plan every installation, no matter what its size, so that the maximum benefits are obtained at the minimum cost—and the result is a service which under no circumstances you can afford to be without.

No Cost or Obligation

Medart Engineering Service is given without cost or obligation of any kind whatever. It is a service of which you should avail yourself regardless of what your playground problem may be. Whether your plan is extensive or limited, you will always find it decidedly to your advantage to get the full benefit of our experience.

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Send for our Catalog L. It is perhaps one of the most complete treatises available and is recognized everywhere as a text book on modern playground planning. When you send for it please outline in brief just what your problem is—you will have our earnest and intelligent co-operation.

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MEDART

of the water-supply system to meet the growth of the city includes the construction of the new Fairmount pumping station and the new Baldwin filtration plant. The latter will utilize the present Fairmount reservoir as a receiving basin. The raw water will flow through the present East Side tunnel and will be forced by the pumps at the Kirtland Street station through two 60-inch cast iron pipe lines to the present reservoir at Fairmount. This reservoir consists of two basins with a combined capacity of 80,448,400 gallons. The water will then be pumped from the reservoir to the mixing station of the filter plant. A chemical house will be built over the raw water conduits, and as the water passes through the mixing flume the chemical solution will be applied. There will be four bins for the storage of chemicals, three of which hold 146 tons each, the other holding 71 tons. There will be six tanks for dissolving the chemical and four tanks for storing the chemical solution. Besides the storage bins for chemical in the chemical house, there will be six bins holding 175 tons each in the chemical storage house located on a railroad switch adjoining the Fairmount pumping station. The chemical storage house will be equipped with crushers, elevators, conveyors and unloaders for handling the chemicals as they are shipped in cars to the plant.

The mixing flume consists of a short expanding flume built on an incline with a fall of 3 feet in 20, causing the water to flow down the slope at a rate of 10 feet per second. The fast-flowing water strikes the pool with such force that there is produced what is technically known as the "hydraulic jump." It may be described as a miniature Niagara Falls, consisting of a foaming and seething torrent of water which passes through the flume, intimately mixing a comparatively small volume of chemical solution with a large volume of the water to be treated.

The mixed water enters the coagulation basin and is kept in a quiescent condition for a certain period by slow movement or passage through the basins. During the period in the settling or coagulation basins about 75 per cent of the suspended matter will be settled out of the water. The basins will be four in number, of 8,250,000 gallons each, of concrete with groined arch roof.

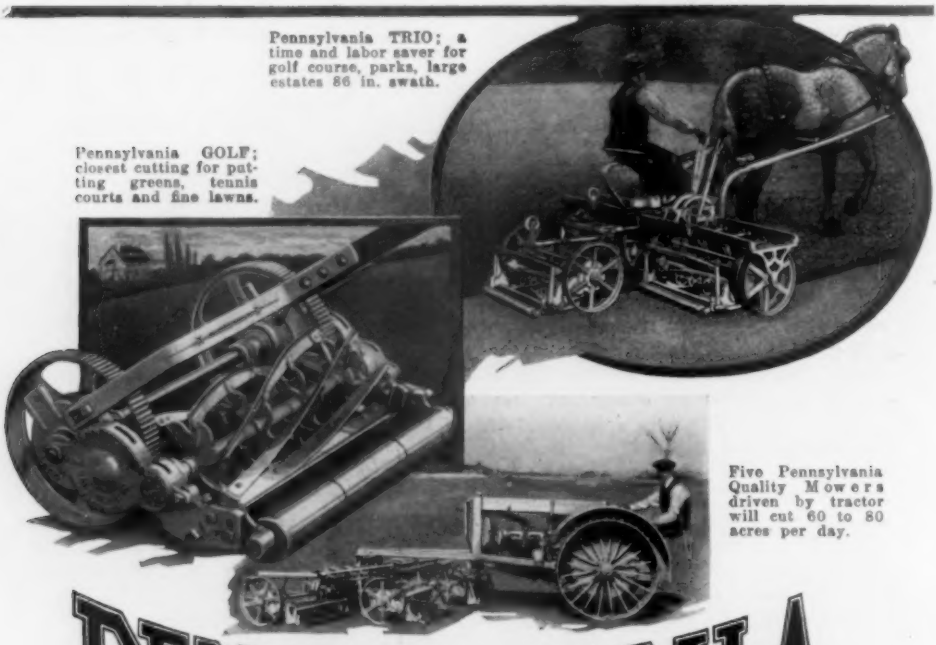
The administration building will be located in the center of the filter building. The first floor will consist of the offices of the superintendent, assistant superintendent, clerk and operators, and a room for visitors. The second floor will consist of the storeroom, the machine shop and a large auditorium. The auditorium will be used in giving lectures on water purification and other educational features. The third floor will consist of drafting and record rooms, reference library, general chemical laboratory, water chemical laboratory, bacteriological, oil, coal and cement laboratory.

The clear water reservoir consists of two basins of reinforced concrete construction of the groined arch type. The storage capacity will be 130,000,000 gallons of water. This reservoir is now in process of construction.

The illustration on page 381 shows a model of the suggested landscape architectural treatment of the grounds of the new Fairmount filtration plant. This model was based on the recommendations of a group of Cleveland architects, engineers and landscape architects acting in concert for the benefit of the city. The model prepared from the plans is about 8 feet square and gives an excellent idea of the appearance of the grounds when completed.

The Bates Experimental Road in Illinois

During the week of March 27, by means of a fleet of trucks, the Illinois Department of Public Works and Buildings, Division of Highways, began the loading of the Bates experimental road near Springfield, Ill. This test road was started in the summer of 1920 and completed early in 1921. It is about two miles in length and includes 63 sections. Each section differs from the others in thickness, in material, or in design affecting its carrying capacity. It is expected that as the loads carried by the trucks are increased, many, if not all, of the sections will eventually be destroyed. The behavior of the various sections in supporting truck loads is expected to give valuable information in the way of confirming or disproving theories that have been advanced as to the load-supporting capacity of pavements of different types and thicknesses. This experiment is somewhat similar to the one being carried on by the United States Bureau of Public Roads in California.



Pennsylvania TRIO; a time and labor saver for golf course, parks, large estates 86 in. swath.

Pennsylvania GOLF; closest cutting for putting greens, tennis courts and fine lawns.

Five Pennsylvania Quality Mowers driven by tractor will cut 60 to 80 acres per day.

PENNSYLVANIA *QUALITY* LAWN MOWERS

DESIGNED for service, built for longest service and proven as giving greatest satisfaction in service, Pennsylvania *Quality* is the accepted standard of lawn mowers wherever large areas must be kept in perfect shape.

Write for "Pennsylvania TRIO Book"

Pennsylvania Lawn Mower Works, Inc.
1615 North 23rd Street, Philadelphia

The City Planning Commission as a Publicity Agent

By Lee R. Cooke
President, Idaho Chapter, American Association of Engineers

THE psychology of municipal politics, for some unknown reason, too often creates a feeling in the mind of the taxpayer that the men to whom he has entrusted the conduct of municipal affairs, once in office, can no longer be depended upon to consider the public welfare in the preparation of an improvement program, or even in the routine conduct of municipal affairs.

Western communities, at least, in which planning commissions exist, quite generally resent the restrictions which any city plan is bound to impose upon certain interests. These feelings, both of distrust and resentment, are born of a lack of knowledge of the aims and ideas underlying development plans, and the overcoming of opposition is quite largely a matter of education and direction of public sentiment.

A common practise requires the municipal authorities to refer any proposed municipal improvement program to the planning commission, for investigation and approval, provided it appeals to them as worthy of commendation. Where it is the custom of the planning commission to hold public discussions on such proposed plans, the custom can be made of benefit to both the municipal authorities and the commission, as well as to the public at large. Investigation by the commission, made without prejudice, will invariably bring out undeveloped phases of the proposed programs, and the hearings will serve the double purpose of offering a means of publicity and of taking advantage of ideas which may be presented. Both regarding the improvement itself, and the conditions which will be created by the improvement, the hearing often offers the first opportunity of getting the point of view of the citizens at large.

The knowledge, brought out by these hearings, that the planning commission stands more or less as a representative of the public, tends to create a confidence in the work of their organization. Approval of a municipal improvement program by such a body of representative men goes a long way to create confidence in proposals of the municipal authorities which they are asking the public to support.

The city planning commission will invariably include within its personnel members of the various organizations of the community, and the individuals on the commission can do effective publicity work in quietly calling the attention of the organizations to which they belong, from time to time, to the plans which are being presented to the commission for their consideration and to the ideas which the commission, on its own initiative, is attempting to work out. City authorities that are overlooking the good which can be accomplished by a planning commission and the help which they can receive from such a commission are losing a big opportunity to lighten the numerous difficulties of municipal administration.

The Demand for Trained Administrators

Government is now playing a more important part in our daily life than at any other time in our national history. The functions of government are broader, the work of administration more complex. The success of government in performing the increasingly diversified services now required depends upon the extent to which the day-to-day work of government is entrusted to men and women trained in public administration.

As a nation, we are on the threshold of a new idea in government. The demand for "more business in government" and the spread of the city manager idea forecast the general recognition of the place of administration in government and the development of a new profession—the trained public administrator.

—National Institute of Public Administration.

16 Distinct Features of the Ideal Power Triplex Mower

A scientifically designed large power mower for mowing the large areas of grass in city parks

1—The Ideal Triplex is one compact unit comprising power plant and cutting units — 15 minutes after you receive the machine you can start cutting grass, as there are no extra parts or attachments to be procured.

2—We build the Ideal Triplex complete in our own plant—it should in no way be confused with the type of assembled machines where some of the units were never intended for power mowing purposes.

3—We build our own cutting units—they are designed especially for this mower, having heavier blades and wheels and being equipped with Timken Bearings, which insures long and satisfactory service under high speed conditions.

4—Weight and traction are important factors on a power-driven mower. The Ideal Power Unit weighs but 1,600 pounds and the two traction wheels are each 12 inches wide.

5—The Ideal cuts clean and the extra traction eliminates any possibility of torn or mutilated turf; moreover, the outfit can be operated on very soft, spongy soil.

6—The Ideal can be successfully operated in many places where other types of power machines and horse-drawn mowers cannot possibly be used.

7—The Ideal has the most simple control of any large power mower built. The two control levers are conveniently placed at the right and left hand side of the operator so that with natural, easy movements the machine can be started, stopped, backed up and turned around in a very short radius.

8—Because of this simple control, operator can cut close to trees and shrubbery, leaving little or nothing for hand trimming.

9—Cutting Units are pushed ahead of the machine permitting the operator to see at all times exactly what he is doing; thus eliminating the danger of clogged blades being dragged over the turf. This insures clean work and grass is not packed down by the traction wheels.

10—Cutting Units are so suspended that they have sufficient flexibility to take care of any uneven spots in the turf.

11—The cutting units are easily elevated from the ground by means of a convenient lever, so located that operator does not have to move from seat.

12—The 4-cylinder power plant provides plenty of power for all conditions encountered and will negotiate steep grades without difficulty.

13—Alemite pressure lubricating system is provided throughout.

14—A roller can be attached and the grass cut and sod rolled in one operation. It can be used for general hauling about the grounds when required.

15—Most important is the fact that this Ideal Triplex is built by power mower experts and we are the oldest and largest builders of power lawn mowers in the world—oldest merely because we were the first to see the practical side of cutting grass by power—largest because the quality and design of our machines has sold more Ideal Power Mowers than all other makes combined.

16—Lastly, there is a nation-wide service back of this Ideal Triplex and the complete machine is fully guaranteed by one concern.

Through our extensive dealer organization with representatives in all principal buying centers, you are assured prompt, efficient service. Write today for our special proposition to city parks.

IDEAL POWER LAWN MOWER COMPANY

R. E. Olds, Chairman

400 Kalamazoo Street, Lansing, Michigan

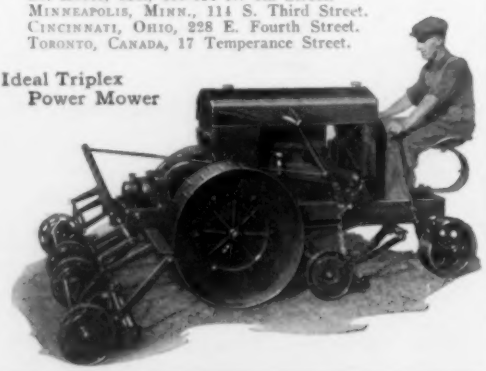
World's Largest Builders of Power Lawn Mowers.

CHICAGO, ILL., 11 E. Harrison Street.
NEW YORK, N. Y., 270 West Street.
BOSTON, MASS., 52 N. Market Street.
PHILADELPHIA, PA., 709 Arch Street.
LOS ANGELES, CAL., 222 N. Los Angeles St.
NEW ORLEANS, LA., 130 Camp Street.
PITTSBURGH, PA., 108 West Parkway.
CLEVELAND, OHIO, 1500 Lakeside Avenue.
DENVER, COLO., 18th and Wazee Streets.
ST. LOUIS, MO., 412-414 N. 4th Street.
MINNEAPOLIS, MINN., 114 S. Third Street.
CINCINNATI, OHIO, 228 E. Fourth Street.
TORONTO, CANADA, 17 Temperance Street.

Ideal Junior Power Mower

A valuable machine for trimming and cutting in close quarters.

Ideal Triplex Power Mower



Street Traffic Signaling

Railroad Signaling Adopted for City Streets

THERE are approximately ten million automobiles on the country roads and in the streets of the cities of the United States. The burden of this tremendous increase in vehicular traffic is chiefly felt in the cities where, in addition to the ever-present problem of keeping the streets as safe as possible, difficulties due to congestion make it a very serious problem.

Leaving out the feature of safety and dwelling entirely upon the problem of getting the traffic by certain points produces a problem analogous to that of railroad traffic. Signaling on railroads was first devised for the safeguarding of life and material. This function of signaling is to-day so widely recognized that present-day signaling is arranged not only to protect trains, but also to expedite their movement; in fact, were it not for signaling on railroads, it would be impossible for many busy lines to handle the traffic which they do to-day.

What signaling has done for railroads it can do also for towns and cities. As an example, we have Fifth Avenue in New York, where a signal indication is simultaneously given to twenty-six blocks of traffic, thereby allowing it to move in a steady stream within a certain limit of time. This method of giving priority to one direction of traffic, then stopping it and giving priority to the other direction, has resulted in a large increase in the number of vehicles which can pass the given points.

These early attempts at traffic signaling have naturally raised many questions as to the best practices to pursue, and it is safe to turn to the precedents set for us by the railroads wherever their principles can be applied to the control of traffic. Among the major principles which can be applied are:

1. The same indication for "Proceed," "Stop" or "Caution" should be used, irrespective of whether the direction is north, south, east or west, or whether the vehicle is going forward or backward.

2. Whenever a "Proceed" indication is given in one direction, "Stop" indications should be given on all conflicting routes to prevent accidents.

3. Signals should be clearly visible and placed at fouling points, that is, at points beyond which it is unsafe to go.

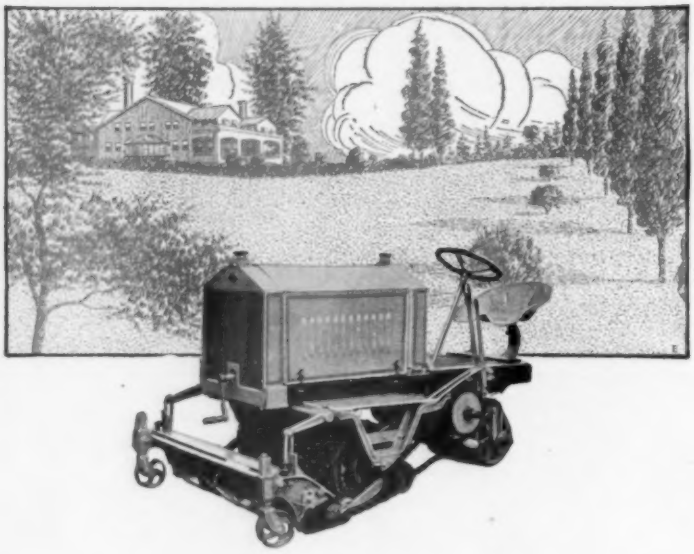
4. In case of failure of apparatus, the "Stop" indication should be given unless the operation of the signal is deliberately discontinued.

The foregoing can be applied to traffic signals with the exception that the location of the traffic signal is a very important matter. Obviously, the signals should not be placed so as to lessen the roadway available to traffic. The ideal location for a signal would be at the intersection of the center lines of the crossing, but, as a rule, this is not desirable because of the necessity for overhead supports, wires, etc. The most practical location would appear to be at diagonal corners; two signals at diagonal corners of the intersection, with a signal suspended over the curb and visible from both streets. Such a signal would indicate in both directions and would be so constructed that it could not give a "Proceed" indication to both streets simultaneously.

Another feature which enters into any extensive street signaling system is the cost of operation. This cost includes not only the salary of the traffic official operating the system, but, in addition, the cost of electric power, if it is used, and the maintenance of the apparatus. Systems have been devised, automatic in their operation, which may cover as large an area of the municipality as is desired, and which are also capable, if desired, of taking the control of the signals at any location or locations away from the central point and of operating them individually by a traffic officer at those points.

Another element of cost, that is, the power consumption, should be reduced to a minimum by the use of efficient lenses which concentrate the light where required. It is desirable to have as few lamps as possible to control the intersections.

Street signaling will undoubtedly show a tremendous development within the next few years that will greatly reduce the number of accidents and the congestion, which not only is bad to-day, but bids fair to become worse from year to year without efficient control of traffic.



Are Your Parks the Beauty Spots They Might Be?

OF all the things that make a city park worth while, the lawns are not least important.

The Coldwell Model "M" Combination Roller and Motor Lawn Mower, with an understanding of the aristocratic nature of velvety-green and carpet-like grass-floors, offers a well qualified, though not expensive, solution to lawns-keeping difficulties.

Not expensive because, cutting and rolling a swath forty inches in width, The Model "M" is capable of covering twenty acres a day, at a consumption of fuel little above one-half gallon per hour, and at an expenditure per day of the labor of one man only for the above amount of work.

The Coldwell Model "M", successor to a long line of successful forbears, is a marvel of automotive construction in its simplicity and appearance, in its cutting capacity and mobility, in its control and great strength—

And in its cost, such a rapid retriever of wasted effort that many satisfied users, after comparative tests, have admitted its ability to save the first cost in one season—leaving, if past Coldwell records are to be believed, many, many seasons to go.

Getting back to your parks—are they the beauty spots they might be? With Coldwell?

Coldwell maintains a department for the effective solution of just such problems as yours, where those who wish to spend the wisest may rest their cares and be protected. Why not consult us?

COLDWELL LAWN MOWER CO.
NEWBURGH, N.Y., U.S.A.

It will interest you to know that —

Courses Are Offered in Public Administration

The National Institute of Public Administration at 261 Broadway, New York City, has announced its courses for the year 1922-23. The Institute was organized recently to carry on and extend the work of the Training School for Public Service of the New York Bureau of Municipal Research. In the last ten years over 450 students have received instruction here; many of whom have gone into positions with state and city governments. The courses cover the entire field of municipal administration.

Schools May Receive Help in Nature Study

The National Association of Audubon Societies has received $30,000 which is to be used to aid teachers and pupils in the study of wild birds. Children will be taught to build bird boxes, feed birds in winter, to learn the names of common birds in their communities, and will be instructed in the value of birds to mankind. Teachers who form Junior Audubon Clubs may receive free material to aid in their work of teaching bird study. Already more than 1,700,000 children have been enrolled in these clubs in the schools of the United States and Canada, and the Association has on hand material to supply 200,000 more children during the next few months. Full information may be obtained by writing to T. Gilbert Pearson, President of the National Audubon Societies, 1974 Broadway, New York City.

Finger-Prints for Everybody Have Been Suggested

William J. Burns, Chief of the Bureau of Investigation of the Department of Justice, has suggested that finger-prints of everybody, young and old, be taken and filed for reference and identification. President Harding has filed his as a beginning of the collection. In certain South American cities voluntary identification cards have been tried. It is understood that the system has been very successful, even when not obligatory. Application for the cards was almost unanimous, because it was readily recognized that a person with nothing to conceal about his identity need not hesitate. The lack of a card, or the refusal to obtain one, as in the case of a stranger seeking employment, would raise a natural suspicion.

Voting Machines Are Obligatory for New York State Cities

Governor Miller has signed the bill which makes obligatory the use of voting machines in all the cities of New York State. While many cities have been using them for years, their use in the cities of this state has been optional.

Drastic Penalties Check Paris Motor Accidents

The Prefect of the Police of Paris has given orders that in the future any motor vehicle which runs down a pedestrian or is responsible for a serious collision shall be seized and put under seal. If the driver is found guilty, he is imprisoned and the car is sold; if acquitted, he regains his car. The plan is said to be very effective in reducing the number of street accidents.

Milwaukee Has Created the Office of City Real Estate Agent

Under the provisions of a law passed last year by the state of Wisconsin, the city of Milwaukee has created the office of Real Estate Agent. A portion of the ordinance defining the office is quoted herewith:

"There is hereby created the position of Real Estate Agent of the City Council and the Public Land Commission, said agent to be appointed by the Public Land Commission by a majority vote to perform such duties in relation to the purchase, sale and exchange of real estate and negotiations leading up to and concluding such transactions in real estate, its appraisal, acquisition, purchase, transfer and sale which such city may acquire, purchase, dispose of, transfer or sell for its use or the use of its departments, bureaus or any part of said city or to be used for streets, in excess condemnation, or as playgrounds, squares or any other purpose of said city, and any and all acts and duties in connection with said real estate which may be required of said Board of Public Land Commisssioners, or its assistants by the Common Council of said city, or by its Public Land Commission."

America's Par-Excellent Power Lawn Mower

When you purchase a power lawn mower, look to its mechanical features as you do in buying an automobile. This is particularly true in park and cemetery work, where it requires sturdy qualities to meet the long, hard grind.

The 4-Acre Power Mower is built with the mechanical perfection and accuracy of a fine automobile, the sturdiness of a tractor, yet extremely simple.

Here Are A Few Of Its Outstanding Mechanical Advantages

Motor—1 h. p. 2 cycle, 3 port, 2½" bore by 2½" stroke, sight-feed oiler, specially designed for mower work, air-cooled, speed 2½ to 3½ miles per hour; few parts and requires little attention.

Transmission—cut gears, enclosed, running in oil bath replenished once a year. Separate control on reel and traction wheels. No exposed parts to catch shrubbery.

Control entirely from steering handle. Miniature differential eliminates twisting and hauling. Easy to cut close to trees, flower beds, fences, etc. Will cut on 30° incline.

Automatic Release on Reel prevents breakage of knives, and reel may be sharpened without removing, thru specially provided reverse gears.

Capacity—width of cut 24 inches. Cuts 4 to 5 acres a day at fuel cost of less than 40 cents a day. Occupies only 18x35-inch floor storage space.

Cooling System. Fan blades in fly wheels force continuous draft over motor.

Shipping Weight. 250 pounds. The weight, evenly balanced over rear roller, provides adequate rolling without stunting the grass. Patents pending.

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The Hotel Financing Company is prepared to give *service anywhere in the United States and Canada.* Each contract accepted by the Company will be given the personal direction of Mr. Hill or Mr. Marts. *THEIR RECORD GUARANTEES SUCCESS.*

For information address

THE HOTEL FINANCING COMPANY
One Madison Avenue, New York

Public Works Programs and Engineers' Salaries

Salaries Must Measure Up to Service Throughout the Country

THE situation which has existed throughout the Middle West and to a lesser degree in other parts of the country for the past year has amounted to a veritable persecution of public works programs and the engineering profession.

During the war the farmer was receiving extremely satisfactory prices, and for a time afterwards prices were good. There was plenty of money in the country and it was easy to borrow. The market for fine cars and expensive farm machinery was large. Then came the land boom. Farms changed hands over and over, some of them the same day, each change involving an increment in the price. Then the price of farm products broke, dropping sharply, crossed the production line and kept falling. Money not only became tight, but could not be secured. Notes fell due and had to be renewed. This condition was not new. Old-timers have lived through it over and over. It was a cause for grave concern, but not for panic, nor did it bring one on.

The reactionary element is always with us, even in the most prosperous times. It fights the building of schools, the installation of water and light systems and the development of adequate highways. This group was quick to take advantage of the mental condition of the public. The leaders went up and down the land preaching havoc and calamity. Meetings were held in many counties throughout the Middle West. Some of these were gatherings of a dignified nature for the thoughtful consideration of public affairs. Others were conclaves of carefully shepherded malcontents. Sets of resolutions were adopted. These were aimed at the road programs, but also included other public activities, such as the schools and the public health nurse. Petitions were circulated asking the authorities to stop all public work, dispense with engineers, cut the school appropriations to the bone, and so on.

The public works engineer found himself in an unenviable situation because of these conditions. Attention was focused in many instances on the iniquitous salary he was receiving. The fact that a year or two ago he was drawing the same salary and riding in the same old Ford in attending to his business, while the state at large was selling corn at a dollar-eighty and buying expensive automobiles, was never mentioned.

When one considers what the engineer has done for cities, counties and entire states throughout the length and breadth of this country, due acknowledgment must be rendered to him. The drainage engineer made half of the Middle West and Western States, the highway engineer is giving them a modern system of highways, and yet in many cases he is considered a pensioner. The county engineer and his force are, in the thought of the public, too often classed with the inmates of the poor farm as dependents of the county, although they are rendering a sincere, invaluable public service.

The reliable engineer is a trained technical man, competent, faithful and giving his best service. It is inexpedient to cut his salary. The loss of the services of a trained county engineer or state highway engineer who knows his county or state like a book is disastrous to the continuity of public work. It takes one or two years for an engineer to thoroughly learn the needs of his county or state. Few engineers can afford slashed salaries or poor remuneration for the sake of the honor in the work. They will be attracted elsewhere by higher salaries and work which will give them a fair living. Several state highway departments have already lost their chief engineers through penurious budgets which made it impossible to pay salaries commensurate with the services of the men. In many instances, entire county highway organizations have been wrecked because the small salaries which the taxpayers would permit could not hold the men from more advantageous positions elsewhere.

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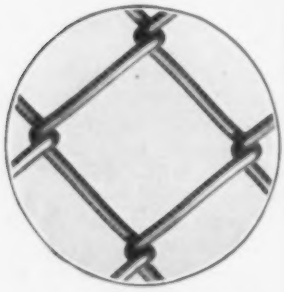

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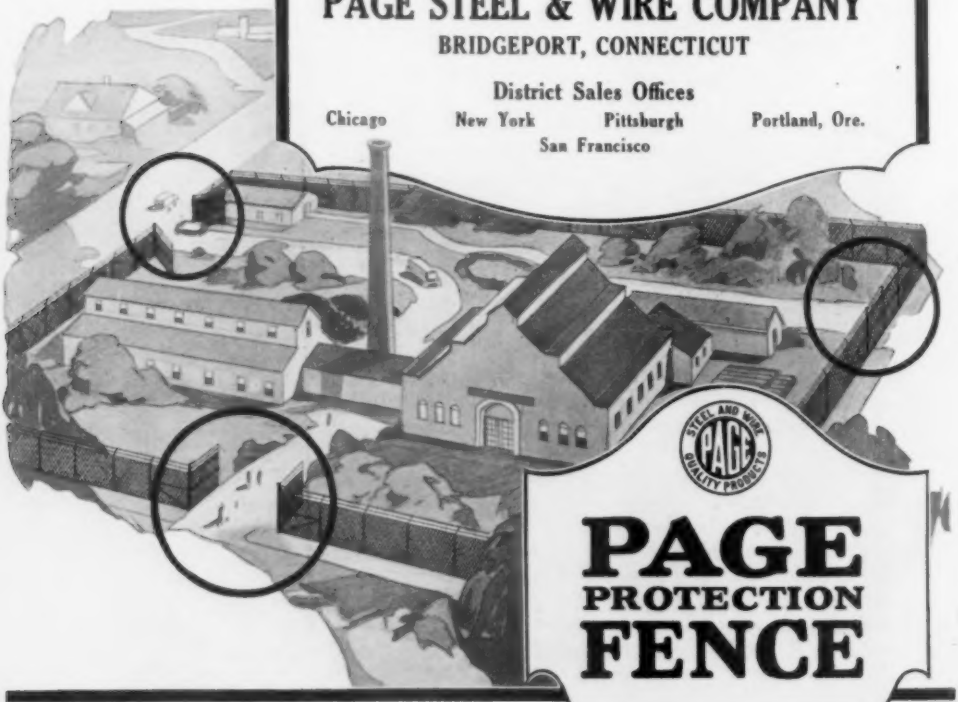


PAGE
PROTECTION
FENCE

The City's Legal Rights and Duties

Information for City Attorneys and Other Municipal Officers, Summarizing Important Court Decisions and Legislation

Conducted by A. L. H. Street, Attorney at Law

Under Ordinance, City May Lawfully Tax Professional Men Who Maintain Office in City

The California District Court of Appeals finds no invalidity or inconsistency in a city's being authorized to levy an occupation tax on the right of an attorney or other professional man to pursue his vocation within the city limits, although the state may have issued a license establishing his general right to practice in the state.

In the case of Waldo S. Johnson, 190 Pacific Reporter, 852, he unsuccessfully contested the validity of an ordinance of the city of Maysville, Calif., imposing a tax of $2.50 per month on "every person engaged in business as a lawyer, maintaining an office in said city." The Court remarked:

"The chief claim of the petitioner is that the city has no power to license the business of a lawyer. It is pointed out that a lawyer is licensed as such by the courts, that his license is in the nature of a vested right, and that any act of the Legislature curtailing this right would impair the obligation of a contract. Without conceding that these claims are well founded, they are, nevertheless, inapplicable to the case. It is true that a license cannot be imposed upon a lawyer, nor can his business be regulated by ordinance. But the petitioner is not charged with practicing law without a license, but with 'carrying on a trade, calling, profession, or business' without first procuring a license. Sections 1 and 4 of the ordinance, when read in connection with section 80, above quoted, show clearly that the license is exacted for 'carrying on the business of a lawyer at a fixed place of business.' The propriety of exacting revenue from one who maintains an office and carries on a business within a city is apparent. Many expenditures by the city are rendered necessary by reason of an office or other place of business within its limits. . . . There appears to be no inherent difference between carrying on the business of practicing law and carrying on any other business or pursuit. It is not questioned that the state may, in the exercise of its sovereign powers, levy license taxes upon merchants and manufacturers who maintain places of business, and this, too, for the sole purpose of raising revenue. A lawyer's office makes certain demands upon the various fire, police, street, and other functions of a city, which differ from above classes only in quantity, and not in quality. If the one should be required to assist in keeping up the revenues of a city, no reason is apparent why the other should not. Whether a license might be enacted for carrying on a law business without maintaining an office is a question that is not before the court. We entertain no doubt that a state license issued to a lawyer authorizing him to practice law is not a bar to the claim of city to levy a license for maintaining an office in connection with such practice. For many years the state has licensed druggists, but it has not been suggested that a druggist's license is the equivalent of a license to run a drug store."

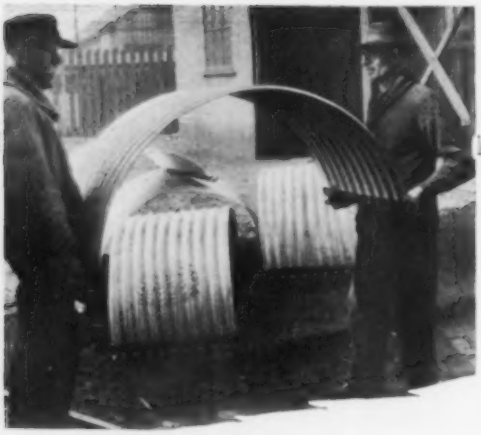
Motor-Cycle Policemen Not Subject to Speed Regulations in Attempting to Overtake Speeders, But Must Use Care

A decision of the Minnesota Supreme Court illustrates the modern tendency of the courts to regard the spirit of a law, rather than its wording, in applying its provisions. (Edberg v. Johnson, 184 Northwestern Reporter, 12.)

Defendant, a Duluth motor-cycle policeman, was sued for damages for colliding with plaintiff, a pedestrian, while attempting to overtake a motorist who was violating the speed limit fixed by the Minnesota Motor Vehicle Act.

Plaintiff sought to charge defendant with negligence conclusively on the ground that he himself was driving his motor-cycle faster than permitted by the Act. It was conceded that the statute expressly exempted "police patrol wagons" from the speed limit, but denied that a motor-cycle could be deemed to be a "patrol wagon." It was argued that by limiting the exception of vehicles from the act to patrol wagons, ambulances, fire wagons, etc., the Legislature excluded motor-cycles. Disposing of these contentions, the Supreme Court said:

"In Hubert v. Granzow, 131 Minn. 361, 155 N. W. 204, Ann. Cas. 1917D, 563, this Court held that, as a general rule, regulations governing the rate of speed on public streets do not apply to fire apparatus on the way to a fire.



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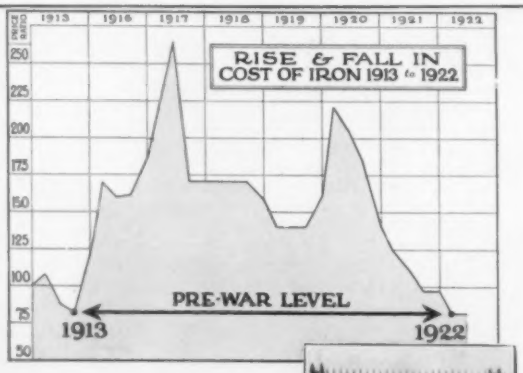
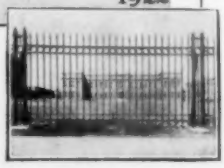


Cost of Iron Back to 1913



One of the major basic costs of iron fencing (steel bars) is now back on a level with the lowest price in 1913. Other factors of cost are probably as low as they will ever go again. Buy now the Enterprise Iron Fencing you have been needing. Lowest price in years.

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The same reasons apply with equal force to vehicles used by police officers. An officer so engaged is performing a public duty. He cannot successfully perform it unless he is accorded privileges not possessed by private citizens. He would be seriously hampered if statutory provisions limiting the speed of motor vehicles applied to him while in pursuit of a fleeing criminal. For reasons of public policy, at least one court has felt free to hold that such provisions have no application even though the statute contained no exceptions in favor of peace officers. State v. Gorham, 110 Wash. 330, 188 Pac. 457, 9 A. L. R. 365. In another jurisdiction, a contrary view was expressed. Keevil v. Ponsford (Tex. Civ. App.) 173 S. W. 518. And in still another it was held that in case of military necessity a statute limiting the speed of motor vehicles should be held inapplicable. . . .

"The statute is not worded as explicitly as it might have been to express the intent the Legislature undoubtedly had in mind. Strictly speaking, a motor-cycle operated by a policeman patrolling the streets is not a police patrol wagon. If the letter of the statute rather than its spirit is to control in its interpretation, the municipal court was right and the district court was wrong. The appliable rules of construction are too well known to justify more than a mere reference to them. The intent of the Legislature controls, though it seems contrary to the letter of the statute, and a construction should be avoided which would result in inconvenience or absurdity. . . .

"To secure the safety of the public is one of the principal objects of the statute. A criminal, seeking to get away from the scene of his crime, commonly travels in an automobile driven at a high rate of speed. There are reckless drivers of automobiles, who pay no attention to the speed laws. Both classes of offenders must be overtaken by the officers of the law, if they are to be placed under arrest. As an aid to officers on patrol duty, no vehicle more serviceable than the motor-cycle has as yet been invented. Of course it is possible for such officers to use automobiles, instead of motor-cycles; but their use would be equally if not more dangerous to others if driven at a high rate of speed.

"Whether the words 'police patrol wagons,' as used in this statute, include motor-cycles, may be open to argument. . . .

"Taking into consideration the objects sought to be attained by the statute, the general use of motor-cycles in patrolling streets and highways when the statute was enacted, as well as at the present time, and the evident purpose of the Legislature to except from the operation of the statute vehicles employed as instrumentalities of municipal fire and police departments, we hold that motor-cycles so employed come within the exceptions made by the statute.

"We do not hold that an officer, when in pursuit of a lawbreaker, is under no obligation to exercise a reasonable degree of care to avoid injury to others who may be on the public roads and streets. What we do hold is that, when so engaged, he is not to be deemed negligent merely because he fails to observe the requirements of the Motor Vehicle Act. His conduct is to be examined and tested by another standard. He is required to observe the care which a reasonably prudent man would exercise in the discharge of official duties of a like nature under like circumstances."

City Operating Public Utility Is Liable for Assault by Superintendent Upon a Patron

Finding that defendant city's superintendent of its water-works department committed an inexcusable assault upon an inoffensive Jewish patron who called to pay his bill, the North Carolina Supreme Court decided that the city must respond in damages, the same as a private water-works corporation would be bound to do under similar circumstances. (Munick v. Durham, 106 Southeastern Reporter, 665.)

When plaintiff presented 50 pennies in part payment of his bill, the superintendent knocked them on the floor, calling plaintiff a "—— —— Jew." This abuse was followed by a beating, to which plaintiff offered neither provocation nor resistance.

Suit brought by plaintiff against the city to recover damages was ordered dismissed by the trial court, on the ground that the city could not be held responsible for the superintendent's wrongful act. But this decision was reversed by the Supreme Court, which says, in part:

"There is no explanation of the conduct of the superintendent, and the only provocation given which we can infer from the language used by Bolton is the fact that the plaintiff was a Jew. He made no other charge.

"The ground upon which the nonsuit was asked and allowed, as presented in this court, is that the defendants and the city of Durham are not responsible for the act of its agent, Harvey Bolton, superintendent of the water-works, or that at least in making the assault he was not within the scope of his authority, in that he had no instructions from the defendants to commit such violence. At the time that the assault was made by the said Harvey Bolton he was acting in his capacity as agent. Had he been acting for a water company under private ownership, it could not be contended that the corporation would not be responsible. He was there in the prosecution and furtherance of the duties assigned to him by the defendant municipality."

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NEWPORT CULVERT COMPANY

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Where There Is No Occasion for Its Further Public Use, Property Owned by City May Be Sold

Upholding the validity of a sale and conveyance by a city to a private manufacturing company of a portion of a court-house site that had never been used for that or any other public purpose, the Virginia Supreme Court of Appeals said in the recent case of Head-Lipscomb-McCormick Co. v. City of Bristol, 105 Southeastern Reporter, 500:

"While at common law a municipal corporation could, unless restrained by its charter, dispose of its lands and other property just as private individuals could, in this country it is generally held that a municipal corporation has no implied power to sell property which is devoted to a public use, but property of which the public use has ceased, or which has never been devoted to any public use, may be sold by the municipality owing it, by virtue of its implied power."

Discharge of Sewage in Stream Is an Actionable Nuisance

Where a municipal corporation discharges sewage into a river or creek, polluting the water of the stream, causing it to become foul, and impregnated with noxious and poisonous substances, rendering it unfit for domestic or other uses, and thereby creating and maintaining a nuisance, which is detrimental to the health, comfort, and repose of a lower riparian owner, and diminishes the value of his land, such municipal corporation is liable for damages arising from the maintenance of such nuisance. (Oklahoma Supreme Court, City of Cushing vs. Luke, 199 Pacific Reporter, 578.)

Under Its Charter, City of Savannah Held to Have Power to Classify and Separately Tax Certain Business Pursuits

The mayor and aldermen of Savannah, under the city's charter, have authority to make a reasonable classification of the general business of selling automobiles, selling or furnishing gasoline, or oil of any kind, etc., and to levy a tax on each of such classes. And where such a tax is levied, and one person conducts several of such businesses, he may be made liable to a tax on each, although one branch of the business may be conducted in a building, and the other on the sidewalk in front of the same building. (Georgia Supreme Court, Lewis vs. Mayor and Aldermen of City of Savannah, 107 Southeastern Reporter, 588.)

Premature Proceedings Contesting the Validity of a Zoning Ordinance Dismissed

A proceeding in the courts to review the validity of a zoning ordinance, on application by a property owner who claims that the marketability of his land is injuriously affected will be dismissed as being premature, in the absence of a showing that he has been prevented from erecting any building intended for a prohibited use. The proper procedure is to apply for mandamus to require issue of a building permit or to resist conviction of violating the ordinance on the ground of its invalidity. (New Jersey Court of Errors and Appeals, Cliffside Park Realty Co. vs. Borough of Cliffside Park, 114 Atlantic Reporter, 797.)

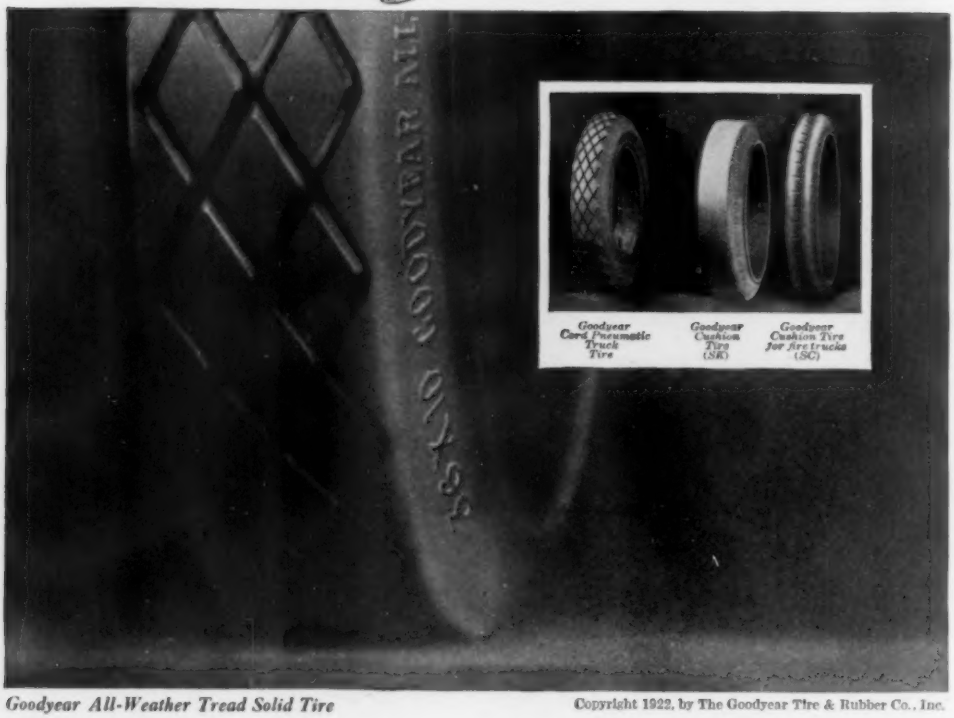
Municipality Liable for Damages Resulting from Creating a Nuisance by Permitting Overflow on Private Property

In the course of improving a highway the authorities of the village of Southampton, Long Island, removed sand from dunes on a shore in such way that ocean water was permitted to penetrate through the cut made and overflow plantiff's lawn, thereby destroying grass, trees, shrubs, etc.

Plaintiff sued the village authorities to recover damages, and the Appellate Division of the New York Supreme Court upholds the right of recovery. (Davies v. Jagger, 188 New York Supplement, 789), saying:

"The trial court has correctly held that the present action may be maintained on the authority of Carll v. Village of Northport, 11 App. Div. 120, 122, 42 N. Y. Supp. 576. That the appellant, although a municipal corporation, is not immune from legal responsibility for the creation of a nuisance, is beyond question. Herman v. City of Buffalo, 214 N. Y. 316, 318, 108 N. E. 451. The theory upon which the present action is brought is nuisance. Respondent does not claim damages by reason of a change in grade of the highway, but rather because of defendant's act in causing a cut or opening to be made in the sand dunes, whereby salt water was permitted to run over and upon her land. It is true that the sand taken from the dunes was used to raise the grade of certain highways, although it also appears that a stone wall was constructed across Halsey's Neck lane to stop-gap the openings made in the sand dunes at that point, with the object in view of preventing the salt water from undermining the road. But it does not appear that any similar precaution was taken or a barrier erected in the place where the openings were made at the foot of Cooper's Neck Lane, through which the water came which destroyed plaintiff's plants and shrubbery."

GOODYEAR



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HANDBOOK OF MUNICIPAL GOVERNMENT

Charles M. Fassett, Specialist in Municipal Government, University of Kansas; former Mayor of Spokane, Wash. Thomas Y. Crowell Company, New York. 1922. VIII + 192 pp. $1.50.

This book covers concisely the entire field of municipal government. Starting with the ancient city, it traces modern institutions to their present forms. Among the subjects discussed in detail are forms of government, charters and home rule, elections and appointments, the duties of administrative officers and their departments. The closing chapters are on municipal finance and the obligations of citizenship. The author's long experience with municipal problems enables him to handle his subjects in a direct, practical way. The volume includes a bibliography prepared by the Research Division of the American City Bureau.

ASSETS OF THE IDEAL CITY

Charles M. Fassett, Thomas Y. Crowell Company, New York. 1922. XV + 177 pp. $1.50

A clear, condensed summary of the various elements of modern municipal life. There are brief discussions of municipal government, with chapters on streets, utilities, transportation, health, recreation, educational and correctional institutions, and other subjects. The book is well adapted for use as a text-book for schools or citizenship classes. There is a foreword by Harold S. Buttenheim, editor of **The American City.**

MOTION PICTURES FOR COMMUNITY NEEDS

Gladys and Henry Bollman. Henry Holt and Company, New York. 1922. IX + 298 pp. Illustrated. $2.00 postpaid.

Both of the authors have long been associated with the educational film business, and are thoroughly acquainted with the subject. The book is practical, giving the development of the educational film pictures, a discussion of the exhibitor's problems, many suggested programs for various types of audience, and a large amount of technical, mechanical and legal information.

HISTORY OF PUBLIC POOR RELIEF IN MASSACHUSETTS—1620-1920

Robert W. Kelso, A.B., LL.B., President of the National Conference of Social Work. Houghton Mifflin Company, Boston. 1922. 200 pp. $2.50.

A comprehensive account of poor relief in Massachusetts, tracing back to origins in England and in colonial history. The concluding chapters describe the absorption of relief by the state, and the development of the Massachusetts Department of Public Welfare, with special attention to the Child Care and Child Placing System of the state.

PUBLIC OPINION

Walter Lipmann. Harcourt, Brace and Company, New York. 1922. 427 pp. $2.75.

This book is the first attempt to survey in the light of modern conditions the force of public opinion. It is not a moralistic judgment, but an investigation of such things as the principles of censorship, propaganda, publicity, electioneering, and news. It is the outgrowth of ten years' study and experience in newspaper work, politics, and war service.

NEW ERA CIVICS

John B. Howe, Litt. D. Iroquois Publishing Company, Inc., Syracuse, N. Y. 1922. X + 420 pp. Illustrated.

A textbook for school use. It is divided into five parts, Citizenship, The Nation, The State, The Local Community, and The Parties. At the end of each chapter are suggested questions for teachers.

HYDRAULICS OF PIPE LINES

W. F. Durand, Professor of Mechanical Engineering, Stanford University, California. D. Van Nostrand Company, New York. 1921. XVI + 271 pp. 134 illustrations. Price $4.50.

This book gives in a reasonably small space a valuable discussion of the more important hydraulic problems connected with water and oil pipe lines and pipe line flow. The treatise is almost entirely from the flow standpoint. The six chapters cover elementary principles, surge, water ram or shock, stresses, materials, joints, fittings, etc., and a discussion of oil pipe lines or those intended for the carrying of other viscous fluids.

THE MODERN CITY AND ITS GOVERNMENT

William Parr Capes, Secretary, New York State Conference of Mayors and Other City Officials; Director, New York State Bureau of Municipal Information. E. P. Dutton & Company, New York. 1922. XI + 269 pp. Charts and diagrams. $5.

A thoroughgoing consideration of the fundamentals of good municipal government. The duties both of the official and of the citizen that chooses the official are discussed. There are chapters on the common forms of municipal government—the federal type, the commission type, and the commission manager form. The chapter on the control and management of city school systems is timely. The concluding chapter is on "The Future Cost of City Government," showing the author's belief that unless the people want the activities of municipal government curtailed, there will be no material decreases in the cost of municipal government.

NEW IDEALS IN THE PLANNING OF CITIES, TOWNS AND VILLAGES

John Nolen, Town and City Planner. The American City Bureau, Tribune Building, New York. 139 pp. Illustrated. $1.00.

Originally prepared as a textbook, this volume presents a comprehensive survey of town and city planning. It gives an outline of the local data needed as a basis of the city plan, the elements of the plan, and the methods of putting it into effect.

CITY PLANNING IN CHICAGO

"South Water Street Facts—Why the Improvement Should Go Forward Without Delay." Published by the Chicago City Plan Commission. 1922. 11 pp. Illustrated. Discussion of the urgency of the double-decked thoroughfares proposed for South Water Street. (Apply to Chicago City Plan Commission, Hotel Sherman, Chicago, Ill.).

TEXAS WATER-SUPPLIES

"Water Supply for Texas—Keeping It Pure," by Wilson T. Davidson, M. D., Director of Public Health, Dallas, Tex. Reprinted from **Texas Municipalities**, of January, 1922. 6 pp. Illustrated. (Apply to author, address above.)

NORTH DAKOTA ENGINEERS

"Proceedings of the North Dakota Society of Engineers, Twelfth and Thirteenth Annual Meetings, 1921. 91 pp. 75 cents. (Apply to E. F. Chandler, Secretary-Treasurer, University, North Dakota.)

MOTOR BUS LINES

"Fundamentals in the Operation of Motor Bus Lines," by G. A. Green, General Manager, Fifth Avenue Coach Company, New York, N. Y. Published by the National Motor Truck Committee, National Automobile Chamber of Commerce, 366 Madison Avenue, New York, N. Y. 7 pp. (Apply to publishers.)

DRUG ADDICTION

"Narcotic Drug Addiction," speech of the Hon. Lester D. Volk of New York in the House of Representatives, January 13, 1922. 16 pp. (Apply to author, Washington, D. C.)

NATIONAL CONFERENCE OF SOCIAL WORK

Proceedings of the National Conference of Social Work at the Forty-eighth Annual Session, held in Wisconsin, June, 1921. Published by the University of Chicago Press, Chicago, Ill. (Apply to William H. Parker, General Secretary of the Conference, 315 Plymouth Court, Chicago, Ill.)

MUNICIPAL EMPLOYEES' ANNUITY AND BENEFIT FUND

"An Act Relating to Municipal Employees' Annuity and Benefit Fund, Chicago," with explanatory statement and accompanying tables. 1921. 130 pp. Covers the act in force in Chicago since July 1, 1921. (Apply to The Municipal Employees' Annuity and Benefit Fund, Room 1005, City Hall, Chicago, Ill.)

STATE PARKS

"State Parks," by Harold A. Caparn, landscape architect, New York. 17 pp. Illustrated. Descriptions of state parks in the United States. Published as a Supplement to the **National Municipal Review**, November, 1921. (Apply to the National Municipal League, 261 Broadway, New York, N. Y.)

Cletrac Is Never Idle

CLETRAC will keep your streets clean as a whistle; the year around. It is the ideal power for building new roads and keeping old ones up to date. And its sensible crawler-type construction allows Cletrac to stay on the job in spite of bad weather and slippery footing.

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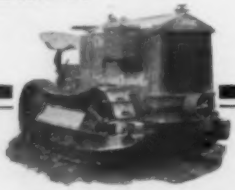


EXPANSION AND CONTRACTION OF CONCRETE

"A Study of the Effect of Moisture upon the Expansion and Contraction of Plain and Reinforced Concrete," by Torata Matsumoto. Published as Bulletin No. 126, Engineering Experiment Station, University of Illinois. 1921. 37 pp. Illustrated. 20 cents. (Apply to the Engineering Experiment Station, University of Illinois, Urbana, Ill.)

NEW JERSEY ROADS

Paper on Roads, presented by C. E. F. Hetrick, Mayor, Asbury Park, before the North Jersey Shore League of Municipalities. Illustrated. (Apply to author.)

NEW YORK STATE HEALTH DEPARTMENT

"Work and Aims of Health Department," by F. D. Beagle, Executive Clerk, State Department of Health, Albany, N. Y. Reprinted from the January-February, 1922, **State Service** Magazine. 7 pp. (Apply to author, address above.)

TESTS FOR PURE WATER

"The Reactions of Culture Media," by George C. Bunker, Physiologist to The Panama Canal, and Henry Schuber, Chemist and Bacteriologist at Miraflores Purification Plant. Reprinted from the **Journal of the American Water Works Association**, January, 1922. 53 pp. Illustrated. Gives the results of the authors' experience in determining the hydrogen-ion concentration of some of the commonly used media by means of color standards. (Apply to George C. Bunker, Physiologist to The Panama Canal, Ancon, Canal Zone.)

CITY PLANNING IN THE UNITED STATES

"A Review of City Planning in the United States, 1920-21," by Theodora Kimball, Librarian, School of Landscape Architecture, Harvard University. Enlarged from article in **National Municipal Review**, January, 1922. (Apply to author, Cambridge, Mass.)

THE POLICE POWER AND CITY PLANNING

"Enforcing an Official City Plan for Streets as a Police Power Regulation." Published by the National Conference on City Planning, as Bulletin No. 2, Series 1922. Contains the decision in the case of Town of Windsor, Conn., vs. Henry D. Whitney et al., that under a proper statute an official plan may be adopted which private development must follow, for which interference there is no compensation. (Apply to Flavel Shurtleff, Secretary, National Conference on City Planning, 60 State Street, Boston, Mass.

CONDUCTING A MILK CAMPAIGN

"How to Have a Successful Milk Campaign," by the Departments of Agricultural Journalism and Home Economics of the University of Wisconsin. Published by the Extension Service of the College of Agriculture, University of Wisconsin, Madison, Wis., as Circular No. 140, December, 1921. 32 pp. Illustrated. (Apply to publishers.)

SURVEY OF ST. LOUIS, MO.

"St. Louis Social and Religious Survey," conducted by the Church Federation of St. Louis, Mo., 1922. An 8-page folder. (Apply to The Committee on Social and Religious Surveys, 111 Fifth Ave., New York, N. Y.)

SAFETY INSTRUCTION IN SCHOOLS

"Safety Education," a report read to the Cincinnati Principals' Association, January, 1921, by F. E. Reszke, Principal Whittier School, Cincinnati, Ohio. 10 pp. (Apply to author, address above.)

THE EVOLUTION OF THE U. S. PUBLIC HEALTH SERVICE

"The United States Public Health Service: Its Evolution and Organization. Reprint No. 661 from the Public Health Reports, May 27, 1921. Published by the United States Public Health Service, Treasury Department, Washington, D. C. (Apply to publishers.)

NEW ROCHELLE, N. Y., ZONING ORDINANCE

Zoning Ordinance of the city of New Rochelle, N. Y. 16 pp. Map. (Apply to Jere Milleman, Chairman of Board of Appeals on Zoning, 31 Faneuil Place, New Rochelle, N. Y.)

THE RESOURCES OF THE SOUTHERN STATES

"Blue Book of Southern Progress," published by the **Manufacturers Record**, Baltimore, Md. 1922. 72 pp. 50 cents. A brief industrial history of the South, with statistical statements of the existing and potential resources of the region. (Apply to publishers, address above.)

FINANCES OF SCOTT COUNTY, IOWA

Financial Report of Scott County, Iowa, for the year 1920. Compiled by the County Auditor. (Apply to Joseph Wagner, County Auditor, Davenport, Iowa.)

PROTECTION OF STATE FORESTS

Forest Warden's Manual, by W. Darrow Clark, Chief Forest Fire Warden of North Carolina. Published by the Forestry Division, North Carolina Geological and Economic Survey, 1922. 23 pp. (Apply to author, Chapel Hill, N. C.)

WATER PUBLICATION

For copies of "Water Purification in Iowa," listed in **The American City** for March, 1922, apply to Jack J. Hinman, Jr., State University of Iowa, Iowa City, Iowa.)

THE CHICAGO PUBLIC SCHOOLS

"Suggestions for Studying the Chicago Public Schools," prepared by the Board of Education for the convenience of the members of the National Education Association attending the meeting of the Department of Superintendence. 1922. 40 pp. Illustrated. (Apply to Louis F. Wilk, Secretary, Board of Education, Chicago, Ill.)

Municipal Reports

Baltimore, Md.—The Ordinance of Estimates for the year 1922, with detailed statements of the appropriations for the maintenance of the government of the city of Baltimore. (Apply to Peter E. Tome, City Comptroller, Baltimore, Md.)

Bellingham, Wash.—City Comptroller's Annual Report. 1920. (Apply to Charles A. McLennan, City Comptroller, Bellingham, Wash.)

Boston, Mass.—Annual Report of the Assessing Department for the year 1920. (Apply to Frederick H. Temple, Secretary, Assessors of the City of Boston, City Hall Annex, Boston, Mass.)

Chicago, Ill.—Twenty-fourth Annual Report of the Department of Gas and Electricity, 1920. (Apply to William G. Keith, Commissioner of Gas and Electricity, Chicago, Ill.

Clarksburg, W. Va.—Semi-annual Report for the six months ending December 31, 1921. (Apply to Harrison G. Otis, City Manager.)

Dayton, Ohio.—Annual Report of the Division of Health, Department of Public Welfare, for the year 1921. (Apply to A. O. Peters, M. D., Commissioner of Health.)

Erie, Pa.—Fifty-fourth Annual Report of the Commissioners of Water-works, for the year ending December 31, 1920. (Apply to James S. Dunwoody, Superintendent of Water-works.)

Greeley, Colo.—Annual Report of the Water Department for the year ending December 31, 1921. (Apply to Milton Seaman, Superintendent of Water, Greeley, Colo.)

Jackson, Miss.—Quarterly Financial Statements for the quarters ending September 30, 1921, and December 31, 1921. (Apply to A. W. Tobias, City Auditor.)

Kalamazoo, Mich.—Budget for the year 1922, as enacted by the City Commission, December 30, 1921. (Apply to Harry H. Freeman, City Manager.)

Kalispell, Mont.—Eighth Annual Report of the Water Department for the year ending December 31, 1921. (Apply to W. H. Lawrence, Superintendent of Water Department.)

Los Angeles, Calif.—Eleventh and Twelfth Annual Reports of the Board of Public Utilities, for the years ending June 30, 1920, and June 30, 1921, respectively. (Apply to Robert E. Wirsching, President Board of Public Utilities.)

Los Angeles, Calif.—Report of the Auditor for the fiscal year ended June 30, 1921. (Apply to John S. Myers, City Auditor.)

New York, N. Y.—Report of the Commissioner of Taxes and Assessments for the year ending March 31, 1921. (Apply to C. Rockland Tyng, Secretary, Commission of Taxes and Assessments, New York, N. Y.)

Palo Alto, Calif.—Annual Report of the Health Department for the year ending December 31, 1921. (Apply to Louis Olsen, Health Officer.)

Saginaw, Mich.—Annual Report of the Department of Light, Water and Sewers for 1921. (Apply to R. F. Johnson, Commissioner of Light, Water and Sewers.)

St. Louis, Mo.—Annual Report of the Board of Commissioners of Tower Grove Park, for the year ending December 31, 1921. (Apply to C. E. Hutchings, Secretary, Commissioners of Tower Grove Park, St. Louis, Mo.)

Wilmington, Del.—Fifty-second Report of the Board of Water Commissioners, for the fiscal year 1920-21. (Apply to James I. Ford, President, Board of Water Commissioners.)

Winston-Salem, N. C.—Annual Report of the Department of Health for the year ending December 31, 1921. (Apply to R. L. Carlton, M. D., Health Officer.)

CUT STREET CLEANING COSTS SQUARELY IN HALF!

The AUTOSWEEPER

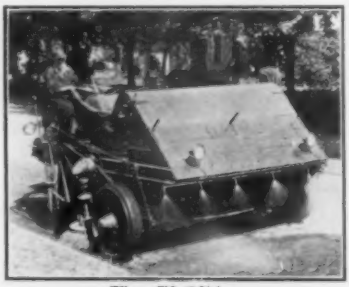
The Auto Sweeper for Streets

Works at *twice* the speed of horse-drawn sweepers. One AUTOSWEEPER does the work of *two* horse-drawn sweepers.

Sprays the street and sweeps it.

Placed near center of street, it is unequalled as a "feeder" to a pick-up sweeper.

Circular No. A-44 tells all about the AUTO-SWEEPER.



The ELGIN

A Pick-Up Sweeper

A sentence from a sample letter:—
"We have made 50% saving in street cleaning since introducing the ELGIN, Aug. 20, 1918." Name on request.

You'll find "*The Eventual Method*" in The ELGIN: the machine that sprays the street, cleans the gutter, sweeps 10 ft. of pavement, collects the refuse and carts it away.

163 owners have 284 Elgin machines.

Circular No. A-48 describes The ELGIN.

The AUTO-EDUCTOR

Catch Basins Cleaned Quickly

During last September, Chicago's 7 AUTO-EDUCTORS cleaned 2,809 catch basins at $1.90 each.

In the same month, Chicago cleaned 1,165 catch basins by hand. These cost $4.41 each.

The AUTO-EDUCTOR *saved* $2.51 *per catch basin.*

Without alteration, and with little additional equipment, the AUTO-EDUCTOR becomes a flusher, sprinkler, tree-sprayer, snow plow, ordinary truck, etc. Can be used 365 days a year, both day and night.

Circular No. A-50 tells how.

THE ELGIN LINE COMPRISES AMERICA'S LEADERS

ELGIN SALES CORPORATION

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Methods, Materials and Appliances

News for City and County Engineers, City Managers, Water-Works Superintendents, City Controllers, Park Superintendents, Purchasing Agents, and Others Interested in the Economical Construction and Efficient Operation of Public Improvement Undertakings

Garbage Handling in Akron

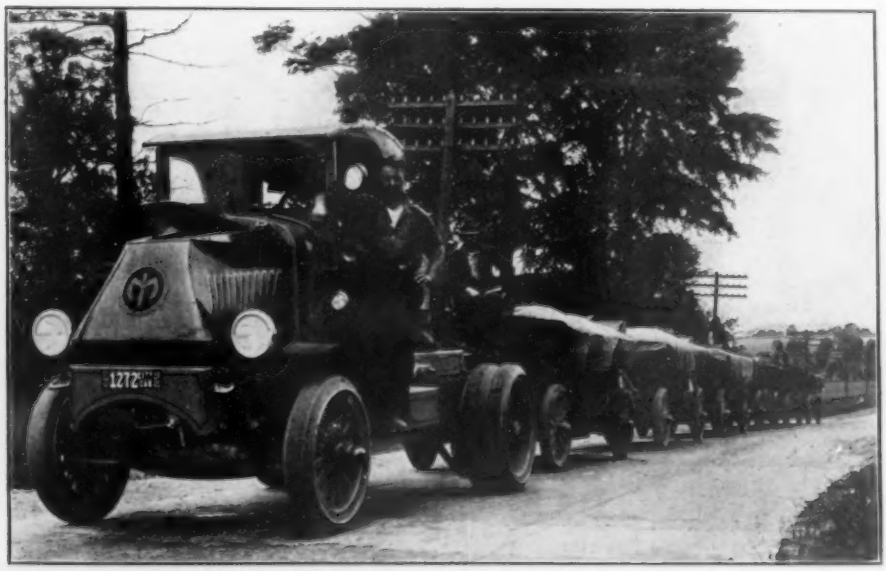
The Division of Waste, Akron, Ohio, has adapted a 15-ton motor tractor to the task of hauling garbage between the city and the stock-feeding farm, 9 miles distant. At the start the engineers thought of using horses, but were practically unanimous in their belief that this would be both expensive and inefficient, so motor trucks were considered. The engineers felt that the purchase of a sufficient number of motor trucks to handle the work would require too large an initial outlay. Furthermore, in house-to-house collection, they realized that horse-drawn units would be much more economical than large motor trucks.

The system as finally organized made use of a 15-ton Mack tractor, made by the International Motor Company, 25 Broadway, New York City, to draw three trailers, each with a capacity of three tons. Each trailer was to be hauled from house to house by horses for the collection of garbage, and then, fully loaded, to be covered with tarpaulin and taken to a central point where they would be formed into a train drawn to the piggery by the tractors. After a few trips it was found that the tractor could handle more than three trailers without excessive strain. Consequently, other trailers were added, and soon the tractor was hauling six trailers on each trip.

The trip from the city to the stock-feeding farm consists of nine miles of well-paved but hilly road with a number of long, steep grades, one with an incline of approximately 9 per cent. The tractor hauled the six trailers on this trip in one hour and forty minutes. The trailers are of the side-dump type with drop frame, which can be unloaded at the piggery in a very short time. The tractor does not carry a load of garbage, but sufficient traction is obtained by a number of weights equal to about two tons. W. C. Rawson is Superintendent of Garbage Disposal, and B. J. Hill, Purchasing Agent for the city of Akron.

New Pumping Engine for Newport, Ky.

The Ahrens-Fox Fire Engine Company, Cincinnati, Ohio, recently received a contract for a 1,300-gallon auto pumping engine and for a tractor to be attached to an aerial ladder truck for Newport, Ky.



A TRAILER TRAIN ON ITS WAY TO THE AKRON GARBAGE FARM

Tractors
for power, speed, economy

Preparing streets for repaving, breaking up old pavements, making new thoroughfares, all require an abundance of steady, dependable power.

Scarifiers, plows, drills, levelers, scrapers, graders, etc., do their best work, and more of it, when propelled by good tractors. This is because the tractor has the reserve power to keep the tool moving constantly at proper speeds and with proper adjustments for maximum results.

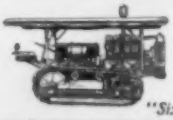
Tractors like the BEST concentrate the pulling power of a large number of animals within a small unit which is easy to manage, easy to maneuver, and which has none of the weaknesses of the flesh.

Best Tractors are famous for stamina, power and dependability, and their cost for up-keep and operation is small. That is why they are being adopted more and more by municipal, county and state officials for road and street making and maintenance.

Let us send you further details on the use of tractors for road and street work. Write for catalogs, prices and names of our nearest dealers.

C. L. BEST TRACTOR CO.
SAN LEANDRO - CALIFORNIA

There are three models of Best Tractors—the "Sixty," the "Thirty" and the "Cruiser" (60). All are factory-built—not assembled.


"Sixty"

"Thirty"

"Cruiser"

A ONE-MAN MOTOR MOWER FOR PARKS

A Small Motor Mower of Large Capacity

To combine the extreme flexibility of the hand lawn-mower with the large cutting capacity, rolling feature and other advantages and conveniences of the motor mower, the Coldwell Lawn Mower Company, Newburgh, N. Y., has brought out the new Coldwell Model L motor mower and roller, which cuts a 25-inch swath. This mower is adapted particularly for large lawns, parks, cemeteries and public grounds and for fine cutting on tennis courts and bowling greens. It is equipped with a Fuller & Johnson motor and is claimed to fill the need for a practical motor-driven hand-controlled lawn-mower with plenty of reserve power which will make it possible to cut close up to and around trees, shrubbery, walks and driveways, to operate efficiently on the smaller areas, and at the same time to be able to cut four to six acres per day on the larger areas of lawn. The cutting knives, which are positively controlled and operated by power transmitted directly from the motor independently of the drive roller, are an integral part of the machine and have been designed and tested for their special function under power.

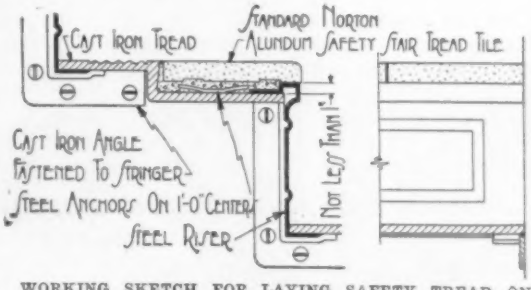
Safe Steps for Public Buildings

Many municipal officials have had their troubles in getting steps that are safe for the public without sacrificing attractiveness and economy. In the Girls' Trade School at Worcester, Mass., a $350,000 building, the architects have made every step slip-proof and at the same time practically wear-proof, thus eliminating maintenance costs. In accomplishing this end, Alundum safety title, made by the Norton Company, Worcester, Mass., has been used in combination with iron and steel.

In laying standard Norton Alundum safety stair tread tile, a bed of mortar well anchored by steel anchors and composed of one part Portland cement and two parts clean, sharp sand, not less than 1 inch in thickness, is applied over a special cast iron tread depressed to receive the tile. The tile is then soaked in clean water, and before setting into place is drained only long enough to allow the water to disappear from the surface. With a mortar composed of one part Portland cement and one part clean, sharp, fine sifted sand, mixed to a consistency usually allowed for ordinary lime mortar, the entire bottom surface of the tile is then scantily buttered. The edges of the tile are also buttered with the same mortar. Then the tile is laid true to line on the bed with a shoved joint of about ¼-inch. Excess mortar is trimmed off with a trowel, and the tile tamped to a level surface, care being taken not to smudge the surface of the tile. As soon as the mortar has properly set, the joints are rubbed and all cement cleaned from the surface of the tile with a soft abrasive brick or a piece of sandstone and water. Immediately after the cleansing of the tile, it is thoroughly rinsed with a strong stream of water, and is kept sprinkled for a period of from two to six days.

New Cast Iron Pipe Office

The United States Cast Iron Pipe & Foundry Company, Burlington, N. J., has announced the opening of a new office at the Interstate Building, Kansas City, Mo., in charge of D. W. Pratt, Sales Agent.


Cast Iron Tread
Standard Norton Alundum Safety Stair Tread Tile
Cast Iron Angle Fastened To Stringer
Steel Anchors On 1'-0" Center
Steel Riser
Not Less Than 1"

WORKING SKETCH FOR LAYING SAFETY TREAD ON STAIRS

Why Road Builders Prefer Kentucky Rock Asphalt

Contractors and engineers who have laid or supervised Kentucky Rock Asphalt pavements prefer it to other hard surface types. The reason for this is evident when the advantages of this natural asphalt mix is understood and verified by experience.

Kentucky Rock Asphalt is ready mixed and ready to lay cold on any base adequate to carry the traffic. It is shipped in open top cars and may be unloaded and handled by machinery at a considerable saving. Kentucky Rock Asphalt is not susceptible to damage from the weather. The material may be ordered in at any time and stored in the open at convenient sites along the work, thereby eliminating costly delays.

No expensive equipment is required in Kentucky Rock Asphalt construction. Shovels, rakes and a roller are all the equipment needed. There is no need of skilled or expert asphalt workmen.

Kentucky Rock Asphalt requires no special binder course on curb. The material is spread cold on the base; raked to proper depth and rolled. The pavement may be thrown open to traffic immediately.

Kentucky Rock Asphalt has eliminated the risk of surface failures or replacements. Every contractor knows that in laying the more common types of asphalts, he constantly faces the risk due to human error in mixing, heating or laying. Kentucky Rock Asphalt is uniform, by laboratory test. Exposure to the elements, even for a period of years, does not affect it. Laid on a base sufficient for the traffic, it always gives maximum results.

Foundation replacement is not difficult even after the surface has been laid. The rock asphalt may be cut away and, after the base has been repaired, the asphalt may be broken up and used again in restoring the surface.

Surface irregularities may be corrected without disturbing the pavement. If a slight depression occurs in the finished job, the surface may be roughened and brought to proper grade by adding rock asphalt. The patch, after a few days' traffic, will bond so perfectly that it may not be detected.

The finished Kentucky Rock Asphalt surface is equal in every respect and in many ways superior to sheet asphalt. It is smooth, noiseless, dustless and resilient. Kentucky Rock Asphalt pavements do not crack, roll, buckle or bleed even under the most severe traffic and climatic conditions.

Kentucky Rock Asphalt has been recognized in the standard specifications of ten states. It has been approved for Federal aid on such heavy traffic roads as the Dixie, Jackson and Lincoln Highways and the National Road.

If you are a contractor, anxious to get away from costly equipment and many uncertainties of road and street construction, or if you are an engineer eager to serve your community by building the best pavement at a reasonable cost, it will pay you to investigate Kentucky Rock Asphalt. Write for Booklet D

Kentucky Rock Asphalt Company

INCORPORATED

711-718 Marion E. Taylor Building **LOUISVILLE, KENTUCKY**

No Concrete House Connections in Baltimore

On page 17 of the January, 1922, issue of THE AMERICAN CITY, there appeared a plan showing the Baltimore method of placing double house connections for sewers under a sidewalk, in the article, "The Laying of Concrete Pipe Sewers." We are in receipt of a letter from A. E. Christhilf, Highways Engineer, Sewer Division, Baltimore, Md., stating that he feels that this caption may lead our readers to the inference that concrete pipe is being used for house sewers in Baltimore. No concrete pipe has ever been used in Baltimore for sanitary sewers. There are, however, some storm-water drains carrying only non-polluted waste that have been built of concrete pipe ranging in size from 24 to 48 inches.

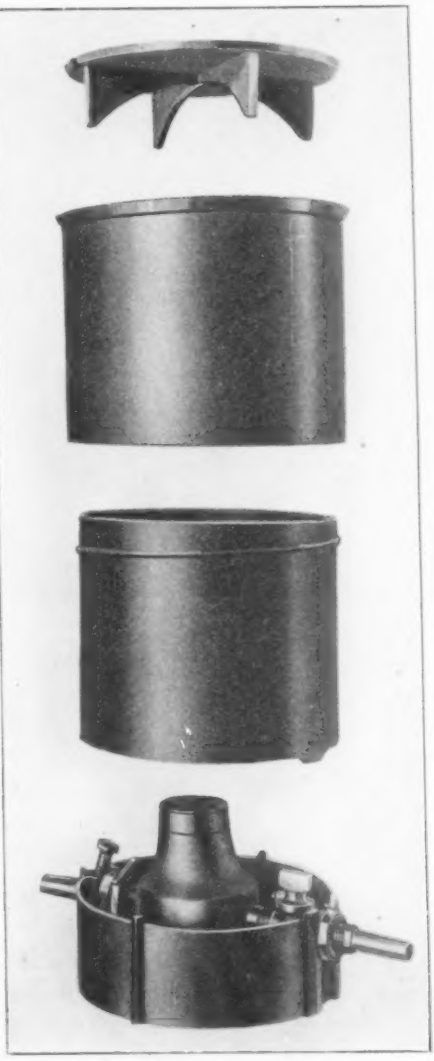
How to Travel to the I. A. F. E. Convention

Fire engineers, fire chiefs and others who expect to attend the annual convention of the International Association of Fire Engineers in San Francisco, August 9-18, should secure a copy of the itinerary which has been prepared by F. E. Bensen, Eureka Fire Hose Department, U. S. Rubber Company, 27 Barclay Street, New York City. This itinerary covers the complete trip from New York, starting August 5, to the convention and return. As reservations are being made in the order of receipt, those who would like to go on this interesting trip should communicate with Mr. Bensen at once.

A Meter Box for Southern Cities

The "Crescent" meter box illustrated herewith has been developed by the Ford Meter Box Company, 406 South Carroll Street, Wabash, Ind., particularly for Southern cities. Exhaustive studies were made of the requirements of the Sewerage and Water Board of New Orleans, La., and this meter box was worked out to fit conditions. The box is complete and entirely self-contained, having within its base a stop and waste cock, an expansion coupling, and a test valve on the outlet side of the meter, all made of high-grade bronze. In comparing the cost of installing this meter box with that of installing any other type, it is well to keep in mind that with it the usual curb stop, curb box, meter connections and test valve are eliminated. The meter may be easily installed or removed without the use of tools, joints being made by compression only. Bronze inlet and outlet parts are tapped regularly for ¾-inch iron pipe, but solder nipples may be used.

Where it may be desired to continue in use a standard curb stop, already installed, a bronze adapter may be substituted for the stop and waste valve as regularly furnished. The main body of the box is of cast iron, made into inner and outer shells, threaded so that the depth of the box may be adjusted to suit service lines from 12 to 18 inches deep. The top of the box is thus easily kept at grade.



A DISSECTED METER BOX

The top of the "Crescent" meter box is made in two regular styles—loose, as illustrated, and locking. The loose lids are provided with deep webs, so that they cannot be jarred out of the cover top. They may be lifted out by means of a hand tool, which is supplied with the box. The locking lid is simple and is operated by a key, which becomes a lifting handle when the lid is unlocked. The keyhole is unobstructed, so that any dirt falling into it will pass straight through and not jam the lock. At present, this meter box is made for standard ⅝-inch meters only, having meter spuds of 1 1/16 inches external diameter.

TIFFIN

Choose Your Street Flusher for What It Can Do and What It Costs to Do It

WE know from reliable records that Tiffin Street Flushers do MORE WORK and BETTER WORK at a lower OPERATING EXPENSE than any other street flushers.

We ask the opportunity of proving these claims to you. Because we have been able to prove them to others, there are, today, more Tiffin Flushers in successful operation than any other make.

The TIFFIN WAGON COMPANY

TIFFIN, OHIO

Builders of Tiffin Motor Trucks (specializing in Municipal types), also Tiffin Dump Wagons, Sanitary Carts, etc., etc.

FLUSHERS

Drinking Fountains for Outdoor Use

Municipal authorities have learned by severe financial losses and bitter experiences that it is ruinous to install fountains designed for indoor use alone along streets, in parks, playgrounds and other open places. They are not usually built strong enough to withstand public wear and tear. Most such fountains must be turned off at the approach of cold weather, and yet there are many pleasant days in the late fall and early spring when drinking water in public places is highly desirable.

The Murdock Manufacturing and Supply Company, Cincinnati, Ohio, makes an anti-freezing drinking fountain designed for all-year service. This fountain does not need to be turned off at the approach of winter, nor does it have to be dismantled or boxed up, as it is built to stand the usual wear and tear on public drinking fountains, with the exception of unusual accidents and malicious abuse. While all working parts of this fountain are buried in the ground below the reach of frost, they are reasonably accessible without digging up the main fixture. Removing the pedal and two small bolts permits all working parts, including the valves, to be lifted out. Thus when re-washering or packing is required, it is only a few moments' work to make the shift.

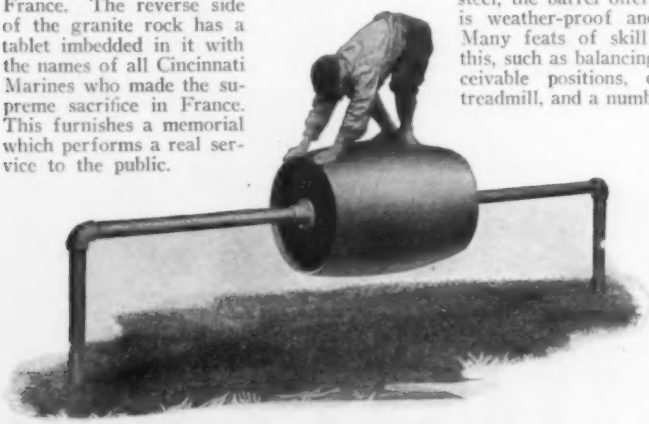
The accompanying illustration shows an anti-freezing fountain with a memorial feature. This was erected in Lytle Park, Cincinnati, by Dr. Merrill Ricketts in memory of his son, who was killed with the Marines in France. The reverse side of the granite rock has a tablet imbedded in it with the names of all Cincinnati Marines who made the supreme sacrifice in France. This furnishes a memorial which performs a real service to the public.

A MEMORIAL FOUNTAIN IN CINCINNATI

A Mechanical Greased Pig

A new piece of playground apparatus that challenges the physical abilities of almost any red-blooded American youngster is shown in the accompanying illustration. This barrel-of-fun is a sort of greased pig affair which has proved quite popular in the Southern States and has been developed by the Hill-Standard Company, Anderson, Ind., for general playground use.

The barrel runs freely in the center of a horizontal pipe axle two feet above the ground. This axle, ten feet in length, extends from the center of the barrel head and is supported at the extreme ends by uprights which are imbedded in concrete. Being made entirely of pressed steel, the barrel offers little chance for injury, is weather-proof and always ready for use. Many feats of skill may be performed upon this, such as balancing with the body in all conceivable positions, diving over, somersaults, treadmill, and a number of other stunts.



IT TAKES AN AGILE YOUNGSTER TO STICK TO THIS

Elgin Moves Chicago Office

The Elgin Sales Corporation has announced that on March 31 it moved its Chicago office to 10 South La Salle Street, Chicago, Ill.

This company handles the sales of Elgin Autosweepers and pick-up sweepers for street cleaning and Auto-Eductors for removing filth from catch-basins.

TRINIDAD
in Chicago

Madison Street, near Wabash, Chicago. Resurfaced with Trinidad Sheet Asphalt in 1912. No maintenance cost to date.

Where quality remains —price is forgotten

Twenty-five years and more of service—under terrific pounding of traffic—is the record of Trinidad Lake Asphalt Streets in all parts of the world.

And it's this wonderful endurance—AN ABSOLUTE PROOF OF QUALITY—that makes Trinidad the lowest-cost paving material on the market.

Many Trinidad paved streets have resisted traffic and the elements for OVER THIRTY YEARS, at a maintenance cost of less than a cent per yard per year. Think of it! No other bituminous material has even approached this record.

Trinidad Lake Asphalt is a NATIVE bitumen—a product created by nature and storm-beaten and sun-cured in the tropics for ages. Neither torrid heat nor arctic cold affect its binding and wear-resisting properties.

Noiseless—long-lasting—low maintenance—resilient—attractive. These are the reasons Trinidad Lake Asphalt is "The Standard Paving Material of the World."

Before paving new streets or repaving old ones, let us send you illustrated folders describing this remarkable nature-made product.

The Genasco Line includes asphaltic roofing, flooring, paints and allied products. Write for descriptive matter.

New York
Chicago
Pittsburgh

THE BARBER ASPHALT COMPANY
PHILADELPHIA

St. Louis
Kansas City
Atlanta
San Francisco

TRINIDAD LAKE ASPHALT

When writing to Advertisers please mention THE AMERICAN CITY.

New Central Fire Alarm Office for Shreveport, La.

At a regular meeting of the Commissioners of the city of Shreveport, La., on February 28, the bid of the Gamewell Fire Alarm Telegraph Company, Newton Upper Falls, Mass., for a new central fire alarm office to be installed in the new central fire station was accepted, including 50 new fire alarm boxes. C. F. Maulen, of the Gamewell Fire Alarm Company's Dallas office, spoke at length on the need of additional boxes and offered to install another 50 boxes, making 100 in all, at a comparatively small additional cost. The latter proposition will be voted on at the next meeting.

A cardboard map was shown the members of the Commission, on which were various colored pins indicating the old boxes in red and the 50 new locations in green. This demonstration convinced the Commission that another 50 boxes will be needed shortly. The Commission also accepted the bid of the Gamewell Company on a 27-box-and-flashlight police system. With the 100 new fire alarm boxes and the 27 new police boxes and flashlights the city will be much better protected. It is felt that a number of mistakes made in telephoning alarms to the central office will be eliminated, thus making quicker action possible.

Another fire station is to be added at the corner of Line and Wilkinson Streets in the heart of the new residential district. The plans and specifications were drawn so that a handsome building will be erected, to cost about $35,000. The new central fire station will be located at the corner of Crockett and Common Streets, will have five doors, a machine shop in the rear, and an entrance on Common Street. The fire alarm office will be on the second story, fire-proof in every respect, and will be furnished with Art Metal furniture. There will be an 80-foot drill tower, with provisions for drying hose, and for a large fire bell. The fire bell will be used only on second and third alarms. This information was furnished THE AMERICAN CITY through the courtesy of S. J. Flores, Acting Chief, Shreveport, La., Fire Department.

Steel Paving-Guards for Roadways

It is a well-known fact that almost any type of paving will ravel at the edges unless properly protected. It will fray because of lack of stability of the shoulder material. This in turn permits the road to lose its correct cross-section. Frost also causes fraying at the edges, and inadequate drainage and heavy and fast-moving traffic break down the edges of brick, concrete and bituminous roads, which are usually held in place only by earth or a cinder shoulder compacted by a steam roller.

When traffic was light and slow, this problem was not particularly important. With the increase of traffic, rubble stones were placed along the side, and later dressed granite blocks and concrete were used as runners or headers. But with the present heavy truck traffic none of these hold up unless supported by some type of steel paving-guard such as that made by the W. S. Godwin Company, of Baltimore, Md. This steel-armored edge bonds with the paving and forms a permanent protection against raveling.

PAVING-GUARD ALONG EDGE OF A HEAVY-TRUCKING THOROUGHFARE IN SOUTHWEST PHILADELPHIA

New Parks for Petersburg, Va.

Petersburg, Va., has initiated a park program to develop some of the well-known Civil War sites surrounding the city. George Burnap, park and town planner, of Washington, D. C., has been engaged to prepare plans for the various portions of this system. One of the first units to be developed is the tract of 450 acres in which remain many of the Civil War entrenchments in a good state of preservation. This area is to be dedicated to the memory of General Lee. East View Park, an attractive piece of land, on the edge of a congested district, is to be remodeled as a community center. Plans have been completed and work is under construction for a nine-hole golf course on the grounds of the new country club, which adjoin the Lee Memorial Park area and form a continuation of the park land of that vicinity.

Why Bridgeport is Unpopular with Crooks

TEN Harley-Davidson police motorcycles are scooting about Bridgeport, Conn., today—catching speeders, curbing reckless drivers and traffic law violators.

In addition to paying the city a profit on this work, the Harley-Davidsons give the citizens a lot of extra police protection without cost to the taxpayers. The very fact that mounted officers are liable to be here, there and everywhere makes the city unhealthy for crooks and they look elsewhere.

Over 800 American police and sheriff departments are finding the Harley-Davidson a real money-maker. It soon pays for itself and then earns the department a good profit by the additional "business" it brings in. And its durability and economy (average, 50 miles for a dollar—gas, oil, tires and all) are famous.

Ask your local dealer for free demonstration of the 1922 Harley-Davidson and the reduced prices. Write us for illustrated literature which shows how several American cities use police motorcycles. No obligation to you.

HARLEY-DAVIDSON MOTOR CO.
MILWAUKEE WISCONSIN

Harley-Davidson
World's Champion Motorcycle

MEDIUM-WEIGHT TRACTORS HANDLING FRESNOS IN GRADING

Tractors for City Parks and Golf Courses

There are about 2,500 golf courses, including both municipal and private courses, in the United States, and every city of any size has at least one park which is kept mowed and attractive. An interesting case of the use of medium-weight tractors in the construction of golf courses is found at the Canterbury Golf Club, of Cleveland, Ohio. In the construction of this course not a single team of horses was used, but seven "Cletracs," made by the Cleveland Tractor Company, Cleveland, furnished the tractive power for all the work—pulling scrapers, graders, ditchers, plows, etc., hauling materials, excavating for traps, throwing up bunkers, leveling off putting greens and tees, and plowing and fitting the grass seed beds for the fairways. The contractor in charge of this work has been using Cletracs for three years in various parts of the country and has frequently used as many as 90 teams of horses on a single course. He has found that one tractor will replace five teams of horses throughout the year.

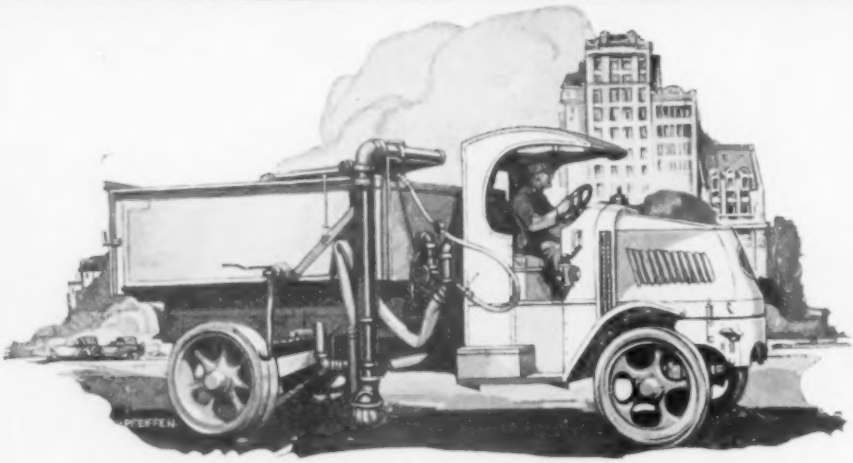
The Inverness Club of Toledo, Ohio, has a 160-acre course, on which horses were used almost exclusively until a Cletrac was purchased, which mows the fairways and the rough, and handles all the haulage and repair work. The tractor used is equipped with smooth tracks that do not injure the turf, and pulls a battery of seven 30-inch roller lawn mowers on the fairways, cutting a 16-foot swath and mowing the 160-acre course in two days. A special field mower attachment on the tractor is used for mowing the rough. The low-set construction of the tractor and its large tractive surface enable it to work on steep grades and hillsides without danger of slipping or tipping. The 12-horse-power draw-bar capacity and short turning radius have made it possible to use the machine for hauling wood, coal, gravel, cinders, building material, etc., and for doing repairing and rebuilding work on the course. Many cities are using Cletracs in park work.

Membrane Waterproofing for Large Reservoir

An interesting test of waterproofing membrane was conducted recently on one of the largest water basins in the South, the Kilpatrick Hill Reservoir at Nashville, Tenn. After a layer of gunite had been shot on the reservoir walls, the waterproofing materials were applied over a small section surrounded by a wooden frame. Over this was applied another layer of gunite concrete. From this section of waterproofing and concrete a heavy weight was suspended, but it failed to displace the waterproofing materials, although the gunite on the walls above the framework cracked slightly under the strain.

The details of the method of conducting the test were as follows: First, the section of the reservoir wall was selected and gunite sprayed over the surface. After the concrete had set, a frame 12 x 12 x 3 inches was braced against the wall, and inside of this the waterproofing membrane was formed, as follows: first, a layer of Genasco priming paint was applied, then alternate layers of Genasco positive seal asphalt B and positive seal burlap were placed, four of the former and three of the latter forming the complete membrane. On top of this membrane manufactured by the Barber Asphalt Company, Land Title Building, Philadelphia, Pa., a slab of gunite averaging 40 pounds to the square foot was sprayed and allowed to harden for four days. A swinging platform was then rigged, one end of the supporting bar being suspended from the box points and the other from uprights. The points of suspension were five feet apart, and a load of six sacks of cement, weighing 576 pounds, was placed at a point one foot from the block. This arrangement gave a direct downward pull of 460.8 pounds against the waterproofing fabric, but despite this test the membrane held fast.

The waterproofing of the big reservoir was carried out by Stewart Brothers Hardware Company, of Memphis, Tenn.



Special Equipment for Catch-Basin Cleaning

THE Otterson Auto-Eductor is effecting marked savings of time and money in many municipalities today. This apparatus is mounted on a 5-ton Mack chassis and consists of a large steel tank, powerful centrifugal pump, hose, connections, etc. It is operated entirely by the truck engine, and constitutes the most efficient outfit made for cleaning catch-basins or corner inlets.

The efficiency of the whole apparatus—truck and eductor—makes possible an immediate saving of from 25% to 75% in the cost of doing such work by obsolete methods. The distinct combination of advantages in the apparatus is its flexibility, its speed of operation, coupled with the low operating cost and long life of the Mack chassis. Specifications will be sent upon request.

Our latest "Municipal Equipment Bulletin" contains detailed descriptions of the most comprehensive line of municipal transport apparatus available today.

You should have a copy. Simply drop us a post-card requesting it.

INTERNATIONAL MOTOR COMPANY, 25 Broadway, New York

Branches owned by this Company operate under the titles of: "MACK MOTOR TRUCK COMPANY" and "MACK-INTERNATIONAL MOTOR TRUCK CORPORATION."

Capacities: 1½ to 7½ tons — Mack TRUCKS — Tractors to 15 tons

"PERFORMANCE COUNTS"

Alvord, Burdick & Howson

Announcement has been made that the firm of Alvord & Burdick will hereafter be known as Alvord, Burdick & Howson, 8 South Dearborn Street, Chicago, Ill. Louis R. Howson, whose name is now identified with the firm, has been a member of the organization for the past fifteen years as assistant, principal assistant, and partner.

George L. Watson Moves Offices

Colonel George L. Watson, C. E., has moved his office from 16 West 41st Street to 150 Nassau Street, New York City, at which latter address he will continue his consulting engineering practice. Colonel Watson's experience covers a wide field in mining, tunnel, bridge, harbor improvement, pipe line and sewer work in the United States, and extensive diversified experience in connection with the Engineering Corps of the English troops and the A. E. F. in Europe. He is a member of the Board of Consulting Engineers of the New York State Bridge and Tunnel Commission and the New Jersey Interstate Bridge and Tunnel Commission.

In his new office, incorporated with those of the George A. Johnson Company, Consulting Engineers, Colonel Watson, in addition to serving his personal clientele, will collaborate in the engineering work of the George A. Johnson Company.

Annual Meeting of Manufacturers of Water Purifying Equipment

At the annual meeting of the Associated Manufacturers of Water Purification Equipment, George M. Hodkinson, American Water Softener Company, Philadelphia, Pa., was elected President, W. E. Titus, Refinite Company, Omaha, Nebr., Vice-President, and F. B. Leopold, Pittsburgh Filter Manufacturing Company, Pittsburgh, Pa., Secretary and Treasurer. General matters of interest to the manufacturers of various water-purifying apparatus were discussed and committees appointed for carrying on the work of standardization in various departments. One matter of particular interest to engineers and architects generally was the adoption of a standard specification for pressure filters which will require the submission of bids upon a recognized standard basis, instead of the haphazard method that has been pursued in the past. These specifications will appear in full in the May issue of THE AMERICAN CITY.

The Modern City

AND ITS GOVERNMENT. By WILLIAM PARR CAPES

Secretary, N. Y. State Conference of Mayors and Other City Officials; Director, N. Y. State Bureau of Municipal Information; Co-Author of "Municipal Housecleaning."

The author's unusual opportunities for the thorough study and comparison of various forms of city government enable him to produce an exceptionally valuable book. He discusses the essentials of good government, the responsibilities of citizenship, city charters, types of government, public schools, the cost of government, etc.

The Boston Herald: "A comprehensive study of government policies and problems in our American cities, both East and West . . . invaluable to city officials and to everyone, whether in city, town or village, who want to see the community so organized and managed as to produce more comfort, better health and better surroundings and conditions."

$5.00 Indexed and fully illustrated with graphs and diagrams.

E. P. DUTTON & CO., 681 Fifth Aveune, NEW YORK

A Great Truck Value

You will be greatly surprised to find how little more it takes to buy a Packard Truck than to get just an ordinary truck.

In many cases, the first cost of a Packard is actually lower than that of others, and in all cases its final cost is much lower.

Its certainty of performance, its economy of upkeep, and its security as an investment, all combine to make the Packard Truck at its present price the greatest value in the motor truck market today.

It is the product of a company that is known for stability and experience. Prompt service at the fairest of prices for labor and parts is available on it everywhere, through nation-wide Packard facilities.

In its daily operation, the Packard requires a minimum of routine care, and it always returns a maximum of powerful, dependable service.

It is a thoroughbred in design, materials, and workmanship. Its quality is the rugged quality essential for long life, freedom from trouble, and low-cost operation.

Have your Packard dealer quote you the figure at which the Packard Truck is selling today. He is ready to advise with you also on any special or body equipment you may require for the economical handling and hauling of your products.

In more than two hundred lines of business, Packard Trucks are relied on today for better hauling at lower cost.

Packard Trucks range in capacity from 2 to 7½ tons, and in price from $3,100 to $4,500, at Detroit

PACKARD

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